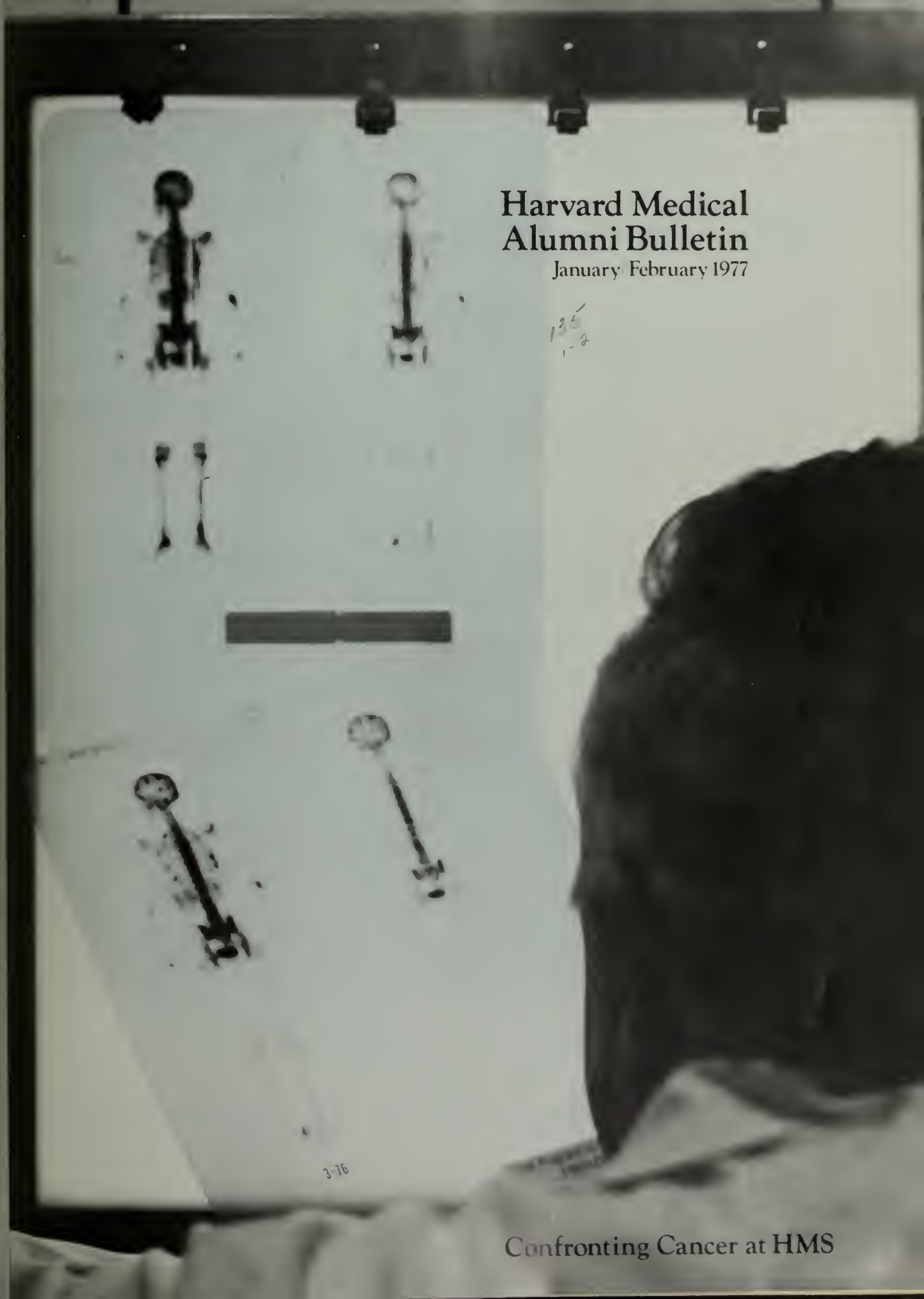

Harvard Medical Alumni Bulletin

January/February 1977

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Harvard Medical Alumni Bulletin

january/february 1977 vol. 51 no. 3

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Cover: The two radionuclide bone scans being compared are those of a woman with carcinoma of the breast who has undergone chemotherapy at the Sidney Farber Cancer Institute. The earlier scan (bottom) shows multiple abnormal foci of radioisotope concentration, indicating sites of tumor invasion of the skeleton. On the follow-up scan, none of these are seen — evidence of a positive response to her chemotherapy.

In this issue, the *Bulletin* takes a look at four of the settings in which Harvard Medical School-affiliated institutions are confronting cancer with the varied tools of chemotherapy, radiation therapy, surgery, and basic research.

Overview

Quest for a dean

How does a lawyer-President go about selecting a dean of a huge and complicated medical school? How can such a person possibly understand enough about the problems of basic science, the intricacies of major teaching hospitals, or the emerging issues of national health policy to make an intelligent choice?

These are sobering questions. Indeed, they led some members of the HMS faculty to wonder whether a committee of medical professors should be formed to select a small list of candidates from which the President could choose. While fully aware of the problems of selecting a dean for such a complex institution, the President chose not to shift the burden of chioce to a faculty committee. In a speech to the faculty, he gave his reasons as follows: "It is difficult to encompass all the important segments, interests, and views of such a large faculty within a single committee. More important, such a procedure can politicize the process of selection and will result all too often in doubtful compromises to achieve a consensus among differing points of view. Finally, there are various qualities in a dean that do not lie within the special competence of a faculty committee to judge, yet are important to the welfare of the School — fiscal management, administration, government and community relations, fund raising and so forth."

But if the President was to carry out the search himself, he would certainly need the advice and help of many people who were highly knowledgeable in the field of medical education. Accordingly, President Bok wrote to all HMS faculty and asked alumni and numerous outside experts to give their views on the problems of the Medical School, the qualities needed in a new dean, and the names of prospective candidates. Over 1365 letters were dispatched and more than 270 answers received. The responses pinpointed the qualities needed in a new dean: He or she should have breadth, style, energy, "muscle," wisdom, tolerance, compassion, tact, strength, self-confidence (but absence of personal ambition), objectivity, vision, humor, humility, rapport with physicians and nonphysicians and with community as well as academic doctors, originality, independent spirit, knowledge of history and arts, love of learning, facility with the spoken and written word, curiosity, frankness, fervor, charisma, skill in economic, legal and political fields, and "a glint in the eye." In addition, he or she should be sympathetic, a good listener, firm, tough, judicious, pleasant, altruistic, capable of accepting advice, youthful (one vote) but not too young (another vote), vigorous, understanding, persuasive, adept at politics and public relations, able to make people work together, able to get along with but not be cowed by prima donnas, and, last of all, able to get along with the President. One contributor expanded on his list of qualifications by saying that the dean should be willing to speak out loudly, right or wrong.

The number of different individuals suggested, who presumably met at least some of the foregoing qualifications, was well over 180. They ranged from junior faculty to *emeritus* professors and included doctors, dentists, basic scientists, and even an economist. Members of almost every specialty were named. The interest in the process was great, and more offers to discuss the choice were made than could be accommodated in the President's schedule.

To narrow the field to a manageable number of candidates, the help of many persons inside and outside the University was required. Accordingly, the President met with dozens of faculty members to talk about individual candidates. He also sought out a substantial number of knowledgeable persons in government, foundations and medical schools to discuss the search. Finally, he appointed an advisory committee of eight faculty members to work more intensively with him in going over long lists of names and soliciting detailed comments on the most promising prospects from experienced individuals around the country. For each serious candidate, questions had to be asked about the depth and breadth of past experience, significance of accomplishments, evidence of creative leadership, and scope of vision for the future. The number of areas — basic science, clinical medicine, primary care and family medicine, and national health policy, to name a few — in which capability was needed seemed formidable, and some advisers despaired of finding a candidate who would both qualify and accept the challenge.

In a statement the President made to the faculty of medicine in February 1976, at the time of Dr. Ebert's announcement of his future retirement, he said that he hoped to make an appointment by the fall of 1976. In early October, although there were still many weeks before fall officially ended, *The Crimson* began calling for progress reports, and faculty members began to ask when an announcement would be forthcoming. At this point, it was impossible to know how quickly an appointment could be made, since everything turned on whether the leading candidate would accept the post and how long he or she would take to decide. As events turned out, fortune smiled on the Medical School. The leading candidate did agree to come, and without long months of negotiations. A new dean was announced on schedule, and the President breathed a long sigh of relief.

— Derek C. Bok

Tosteson will be Walker Professor

Daniel C. Tosteson '49, soon to step into retiring Dean Robert H. Ebert's shoes in leadership of the Medical School, has been appointed Caroline Shields Walker Professor of Physiology, effective July 1, 1977.

Dr. Tosteson

As Walker Professor of Medicine, Dr. Ebert is the first incumbent of the chair, which is the first endowed professorship to be specifically designed for the support of a dean. It was created through a bequest by Mrs. George Walker, a former nurse's aide who had a strong admiration for and close family ties to Harvard.

Ebert to head Milbank Fund

Even though his retirement is only four months away, Dean Robert H. Ebert will not be out of step for long as a prominent figure in the world of health care issues. He will be acceding to the presidency of the Milbank Fund in January 1978, as announced recently by Samuel R. Milbank, chairman of the board.

The role of the Milbank Memorial Fund, established in 1905, is to "improve the physical, mental and moral conditions of humanity." Programs have been aimed at concerns affecting public health, nutrition, mental health and population studies.

Dr. Ebert has served as a member of its board for five years and of the technical board for ten years.

A new, improved MCAT!

That bugbear of medical school applicants and buttress of medical school admission committees, the Medical College Admissions Test, has just emerged, changed, from a five-year process of study and revision. Length, content, scope, and scoring of the thirty-year-old test have all been altered to some extent in the new version constructed by the American Institutes for Research under the direction of the Association of American Medical Colleges.

Students applying for admission in the fall of 1978 will be the first to take the new MCAT, to be administered on April 30 and May 1, 1977. According to Dr. John A. Cooper, president of the AAMC, the test will be doubled in length to a full day's duration, and broadened in scope to elicit problem-solving skills relevant to ordinary medical office practice. The three major sections will be altered in length as follows: 1) Science (both basic science information and problem-solving skills in science): current — 86 items, 60 minutes; new — 217 items, 170 minutes; 2) Verbal: current — 75 items, 20 minutes; new — 73 items, 90 minutes; 3) Quantitative: current — 50 items, 45 minutes; new — 73 items, 90 minutes. Another new feature will be a breakdown of scores in biology, chemistry and physics. A general information section of the old MCAT, designed to assess knowledge of nonscientific data, has been eliminated.

Memorial lecture honors Dr. Licha-López

The memory of a young physician, José A. Licha López, who died in November 1972, while in his first year of residency in psychiatry at the Massachusetts Mental Health Center, will again be honored this year. At 8:15 p.m. on Thursday, March 31, Víctor Bernal y Del Río, M.D. will present the second José A. Licha López Memorial Lecture in Amphitheatre D of the Harvard Medical School.

Dr. Bernal, a graduate of the Columbia Psychoanalytic Clinic, College of Physicians and Surgeons, is executive director of the Puerto Rico Institute of Psychiatry, and is on the faculty at the law schools of both the University of Puerto Rico and the Interamerican University in San Juan.

The theme of this year's lecture, which will focus upon the relation of cultural factors to psychiatric symptomatology, reflects Dr. Bernal's long-standing interests in cultural differences and universals, and in transcultural factors affecting patient care and psychiatric training. Throughout his twenty-three years of private practice in psychoanalysis, Dr. Bernal has been active in working to improve psychiatric care in Puerto Rico.

The José A. Licha López Memorial Lectureship was established by the President and Fellows of Harvard with funds provided in major part by the parents of Dr. Licha López, Dr. and Mrs. José S. Licha, and by his friends and colleagues at the Massachusetts Mental Health Center. In reflection of the broad range of interests of the physician whose memory it honors, the lectureship offers a forum for discussing the relationship of psychiatry to the arts and to other sciences.

The lectureship was inaugurated last year by Jack Geiger, M.D., professor and chairman of the department of community medicine, State University

of New York School of Medicine, Stony Brook, who spoke on "Social Change, Psychiatry, and the Experience of Poverty." On that occasion, a fellow resident of Dr. Licha López at the Massachusetts Mental Health Center in 1972, William Rothschild, M.D., memorialized some of his colleague's special qualities. "He was a man of many passions, with a fierce love for his native Puerto Rico. His empathy for the poor held us in awe, and his hopes were to forge a strong alliance between Mass. Mental and the minority groups of our catchment area, particularly the Spanish-speaking. He often stated the importance of letting them all know that, 'Harvard is their citadel too.' "

The return of the Boylston Medical Society

More than one hundred years ago the Boylston Medical Society, the oldest student medical society in the country, existed in little more than name; indeed, in the 1830s its membership was reduced to a committee of one. Always self-perpetuating, even with such a small nucleus, the Boylston Society survived and flourished, as is well known to all alumni except perhaps those of the late, lean '60s and early '70s, when many of its vital signs were only barely perceptible. Now again there are unmistakable signs of growth.

A small group of interested students — especially two, Ted Steinbock '77 and Ed Yavitz '77 — rallied on behalf of the languishing Boylston Society several years ago, hopeful of restoring its former glory and customs. In doing so, they accepted the obligation "to encourage emulation," an original goal of the Boylston Society when it was established in 1811, and then incorporated in 1823. As a corporation it has by-laws, elects officers, and, for lo these 154 years, has generated a modest income from its original endowment. Members also choose a faculty advisor to act as president of the society; for 1976-77 it is J. Gordon Scannell '40, clinical professor of surgery, who was himself member of the Boylston Society in his undergraduate days.

Until 1925 the Boylston Medical Society sponsored the Boylston Prize Essay in which a cash award was made to the physician who wrote the outstanding paper published in the *Massachusetts Medical Journal* (now the *New England Journal of Medicine*). During the next quarter century, prizes were awarded to undergraduate members for the best essay written (and presented) each year. Besides avid student participation, faculty and alumni also frequently attended Boylston meetings. Dwindling membership and therefore fewer essays to choose among resulted in this practice being largely discontinued. Instead, in recent years the Boylston Prize has been directed towards faculty competition, and awarded for teaching excellence. Eventually, the Boylston Prize may once more be awarded for the best essay presented by a member of the Boylston Medical Society.

To date, the topics discussed at Boylston Society meetings this academic year have ranged from the development of surgical instruments in the nineteenth century, to folk medicine and healing practices of the Zuni and Peruvian Indians, to the isolation of a sleep-inducing material from the brains of sleep-starved animals. Plans for this spring include an evening entitled, "The Best of the Boylston Society," in which prominent HMS alumni may reexamine some of their own Boylston papers. If all goes well, a farewell dinner for members in the fourth year class is also planned for late spring.

Boylston meetings are held at 7:30 p.m., the first Wednesday evening of each month in the Common Room of Vanderbilt Hall. At informal buffet dinners, members, former members, faculty, interested students, as well as alumni can all get to know one another in a more relaxed atmosphere. For further information, drop a note to John Cumutte or Thomas Mustoe, the present co-chairmen, c/o the Boylston Medical Society, Vanderbilt Hall, 107 Avenue Louis Pasteur, Boston, Massachusetts 02115. The Boylston Medical Society lives!

Play it again, HMS II

Attention, Hippocratic hams and medical mummers! An archive of memorabilia from HMS student shows is being established, both for the general amusement and for the inspiration of future Longwood librettists. The idea came from HMSers concocting this winter's second year show, "Cramalot" who wished for greater familiarity with the hoary tradition they were carrying forward.

Any alumni in possession of tapes, records, scripts, scores, photos, or even programs from thespian ventures of their student days should contact Perry J. Culver '41 at the Alumni Office (732-1560) about contributing them to the collection.

Harvard Medical Center: ever heard of it?

Ms. Polly Mansfield has been at her unique job in the medical area for a year and a half. As public affairs policy officer of the Harvard Medical Center, Inc., she serves as a researcher and resource person in the areas of health legislation, planning, and organization for a group consisting of the Medical School and seven of its teaching hospitals, and has a singular bird's-eye view of the activities of all these institutions.

For those to whom Harvard Medical Center is a novel term, Ms. Mansfield explains that the body was originally formed in the 1950s primarily to coordinate fund raising during the "Program for Harvard Medicine." After a brief period of dormancy in the late '60s, the group was reorganized in 1973 to serve as a forum for the sharing of information, plans and resources. Its voting members are the chairpersons of the boards of the Massachusetts General and Beth Israel hospitals, the Massa-

chusetts Eye and Ear Infirmary, the Children's Hospital Medical Center, and the Affiliated Hospitals Center (the Boston Hospital for Women, Peter Bent Brigham and Robert B. Brigham hospitals); the president of Harvard University; and the dean of the Medical School.

In September 1975 the group hired Ms. Mansfield to keep it informed about the implications of new health legislation pertaining to manpower training, regionalization, planning and cost control; and to conduct studies of various functions at all seven hospitals with a view to better coordination and resource-sharing. Thus far, cooperative efforts with which she has assisted have ranged from patient care (coordination of otolaryngological services), to training (review of residency programs), to administration (strengthening the joint fringe benefit program for hospital/Medical School appointees), to the big picture (a proposal for sharing plans for new facilities, equipment and services prior to application for certificates of need). She also acts as the Medical Center's representative on the Central Metro Council of the health systems agency for Region 4 — a planning body established by the 1974 federal Health Planning and Resources Development Act.

Ms. Mansfield, who holds an MSW in community organization and social planning from the Bryn Mawr College graduate department of social work and social research, has a solid background in health planning and organization in Massachusetts. From 1973 to 1975 she was director of the emergency medical services project of the North Shore Health Planning Council, and from 1971 to 1973 was executive director of the Brighton-Allston Community Health Corporation. She has also worked as a planner for the Boston Model Cities Administration (1969-1971) and as community services supervisor for the Boston Legal Assistance Project (1967-1969). Earlier, in California, she served as district council coordinator for United Community Services of San Francisco, as community education and rehabilitation supervisor for the San Francisco Tuberculosis and Health Association, and as coordinator of the San Francisco Committee for Equal Employment Opportunity.

An administrative assist for minorities, women

The new position of assistant to the deans for minorities and women has been assumed by Ms. Eileen Shapiro, who served as the senior staff associate to the Joint Committee on the Status of Women for the past three years.

As part of her new job, Ms. Shapiro reviews, recommends, and helps implement improvements in the status of women and minorities in the medical area — including faculty, staff, house officers, and students. She is available to talk with anyone interested in the role of minorities and women here, whether it be about a general concern or a personal situation.

A 1971 graduate of Brown University, Ms. Shapiro worked for two years as a curriculum writer and editor at the Education and Development Center in Cambridge before coming to Harvard.

Sign up for summer health policy program

March 15 is the deadline for applications to the 1977 Program for Health Systems Management, to be conducted at the Harvard Business School from June 19 to July 29. The intensive six-week program, designed to expand the managerial and problem-solving skills of senior managers in health and health-related organizations, is jointly sponsored by the Harvard graduate schools of public health, business, and medicine.

Among this session's courses will be financial management, marketing management, control, health economics, legal issues, organizational issues, health services, operations management, labor relations, and institutional policy and strategy. Participants are expected to include executives in hospitals, clinics, health maintenance organizations, government agencies, educational institutions, fiscal intermediaries, suppliers, large employers, labor unions, and professional associations. Applicants must be sponsored by their employer organizations. For further information, please contact the Assistant Director for Management Programs, Executive Programs in Health Policy and Managment, Harvard School of Public Health, 677 Huntington Avenue, Boston, Massachusetts 02115.

PRECEPTORS WANTED

Medical students would like to see how a real doctor practices! During July and August 1977, after completing their first year, many students will be seeking a preceptorial experience with an alumnus/a. Any HMS alumni interested in making themselves available for such an opportunity, please write details to the Harvard Medical Alumni Office, 25 Shattuck Street, Boston, Massachusetts 02115.

Editorial

The selling of the HMAB

"Yes, we have no drug advertising. We have no drug advertising today . . ." The lyrics of this once popular quaint tune have been slightly modified to reflect the fact that, just as bananas are a commodity almost always found in any self-respecting grocery store, so has pharmaceutical advertising always been a staple of the HMAB diet. Recently, however, we have become a fatality of the penny-pinching economy of the last several years. Told by computer-conscious marketing researchers that we were not a "good buy," with a circulation then at about eleven thousand (low in their eyes) and a specialized readership (although a highly desirable one loyal to its alumni magazine, thus ensuring high visibility for a select group of advertisers), the drug companies summarily cut alumni advertising from their budgets as of January 1976.

It is not the loss of the pharmaceutical advertising per se, but the effects of losing a consistent source of income that concern us. We have — and hope we always will — two ever-faithful advertisers, the Harvard Coop and the *New England Journal of Medicine*. Our projected advertising revenues cannot, however, be attained by these two alone. Others tend to be ad hoc advertisers; none is committed ad infinitum. Yet we have had moderate success in securing ads from several investment firms; the demographics of HMS alumni indicate that to seek more such consumer advertising — perhaps offerings of real estate — would be a logical option.

Besides losing a mainstay of our annual advertising revenues, we have not fared much better with respect to sundry advertising representatives who have been in the *Bulletin*'s employ. Their promises of an improving situation have not materialized. At present, the outlook is none too good. The latest of our advertising representatives has recently resigned, leaving us to fend for ourselves.

The decision was made long ago that there would be no charge for the *Bulletin,* but we have been expected to provide for a proportion of our own expenses, albeit small. If we can hope to raise only a token amount each year, we may well have to ponder whether the time and energy spent courting possible advertisers is ultimately worth the return.

To reliably estimate what we are to earn annually, we — as well as those once and (we hope) future advertisers — need a measure of positive feedback from alumni. As an example, we refer to an advertisement in the last issue. We hope that all of our readers are aware that the special contents of the 1976 March/April issue, essays on the five physician signers of the Declaration of Independence, have been published by Neale Watson Academic Publications, with complete bibliographical references. Our publisher has expressed a willingness to consider advertising in other alumni journals, and we would like the interest among our own readership to be an impetus for the wide circulation of the *Physician Signers*. We believe that it is a singular accomplishment to be publishing books as well as *Bulletins*.

Our plea is twofold: that alumni help us out with practical suggestions — and personal contacts, if possible — in our effort to sign up advertisers for the long run; and that alumni be more responsive to advertisements that do appear in the pages of the *Alumni Bulletin*. For the present, we shall persevere.

D.W.M.

PROMOTIONS

Professor

William H. Morse: psychobiology in the department of psychiatry
George E. Vaillant '59: psychiatry at the Cambridge Hospital
Avery D. Weisman: psychiatry at the Massachusetts General Hospital

Clinical Professor

Robert M. Smith '38: anesthesiology

Associate Professor

William M. Abbott: surgery at the MGH
Christos A. Athanasoulis: radiology at the MGH
Reinier Beeuwkes III: physiology
George L. Blackburn: surgery
William L. Chick: medicine
Thomas L. Delbanco: medicine at the Beth Israel Hospital
Stephen J. Fricker: ophthalmology at the Massachusetts Eye and Ear Infirmary
Daniel A. Goodenough: anatomy
Lewis B. Holmes: pediatrics at the MGH
Joan C. Kaplan: microbiology and molecular genetics
David Miller: ophthalmology at the BIH
Robert D. Rosenberg: medicine
Michael B. Stemerman: medicine at the BIH
Thomas P. Stossel '67: medicine
Andrew L. Warshaw '63: surgery
Paul M. Wassarman: biological chemistry
Nancy E. Waxler: sociology in the department of psychiatry at the Massachusetts Mental Health Center

Associate Clinical Professor

C. Lee Birk: psychiatry
Arnold H. Colodny: surgery
Robert H. Resnick '55: medicine
Samuel R. Schuster: surgery
Melvin L. Taymor: obstetrics and gynecology

Assistant Professor

Kenneth A. Ault '70: medicine
Margarete di Benedetto: rehabilitation in the department of orthopedic surgery at the West Roxbury Veterans Administration Hospital
Ronald H. Blum: medicine at the Sidney Farber Cancer Institute
Richard D. Brodie: psychology in the department of psychiatry at the BIH
Per A. Eldh: radiology
David R. Eyre: biological chemistry in the department of orthopedic surgery
Neil T. Feldman: medicine at the Peter Bent Brigham Hospital
Ivan D. Frantz III '41: pediatrics
Steven R. Goldberg: psychobiology in the department of psychiatry
Isaac C. Henderson: medicine
Charles H. Hennekens: medicine
Judith A. Jedziniak: ophthalmology (biochemistry)
Paul L. Kornblith: surgery
Ronald D. Larsen: radiation therapy at the Joint Center for Radiation Therapy
Stanley Lee-Son: anesthesia at the PBBH
Gordon T. Moore '63: medicine at the Cambridge Hospital
Richard A. Murphy: anatomy
Joseph B. Nadol, Jr.: otolaryngology at the MEEI
Eileen M. Ouellette '62: neurology at the MGH
Nicholas A. Saunders: medicine
Stephen C. Schoenbaum '66: medicine at the PBBH
Edward R. Shapiro '68: psychiatry at the McLean Hospital
Chester P. Swett, Jr. '66: psychiatry at the MH
Ira B. Tager: medicine
Phang-Cheng Tai: microbiology and molecular genetics
Alfred D. Weiss: neurology at the MGH

Assistant Clinical Professor

Laurence I. Barsh: oral diagnosis and oral radiology
Alan H. Bennett: surgery
Herbert L. Cares: surgery
Axel Hoffer '61: psychiatry
Paul J. Laraia: medicine
Amos Nahor: psychiatry
Randolph B. Reinhold: surgery
S. Norman Sherry: pediatrics
Irwin E. Thompson: obstetrics and gynecology

Lecturer

Francis L.A. de Marneffe: psychiatry

APPOINTMENTS

Professor

Amico Bignami: neuropathology at the WRVAH

Assistant Professor

George Giannopoulos: obstetrics and gynecology (biochemistry)
Charles D. Stiles: microbiology and molecular genetics

Toward meeting our modern health needs

by Derek C. Bok

The first home of the Beth Israel Hospital, on Townsend Street in Roxbury.

I am very pleased to have the privilege of being with you at this annual meeting of the Beth Israel Association. It was about fifty years ago that one of your physicians in chief, Dr. Harry Linenthal, began informal talks with Dean Edsall about the possibilities of developing a relationship between Beth Israel and Harvard when the hospital moved from Townsend Street in Roxbury to Brookline Avenue. We should all take pride in everything the BI has accomplished over the past fifty years in becoming a major teaching hospital of the Harvard Medical School. Observing the modern Beth Israel, it is difficult to recall its humble origins as a haven for Jewish immigrants and an opportunity for Jewish doctors who were not permitted to join the staffs of the established hospitals of the city. The progress over six decades has been truly remarkable. As a teaching hospital, the Beth Israel has produced graduates who have gone on to occupy major posts throughout American medicine. As a center of scientific inquiry, the Beth Israel has been the home of Dr. Paul Zoll's introduction of the cardiac pacemaker, Dr. Herrman Blumgart's classic studies on thyroid and heart disease, and a host of other useful discoveries. Above all, as a hospital dedicated to service, the Beth Israel has consistently been in the forefront of new and imaginative approaches to patient care. The decision to eliminate ward services, and thus to integrate all inpatient care, made Beth Israel one of the first one-class teaching hospitals in America. The launching of the Beth Israel Ambulatory Care Center provided a model of low cost primary care for the surrounding community. Dr. Rabkin's work in developing a statement on the rights of patients was a pioneering effort to safeguard human values in an age when many critics feared that sick persons were on the verge of becoming mere objects for the conduct of research and new techology.

These accomplishments are the work of many people — doctors, scientists, administrators, trustees and generous benefactors. I hope that everyone here shares the admiration that we at Harvard feel for all that Beth Israel has come to represent for American medicine.

Even as we celebrate these accomplishments, we must also acknowledge the presence of a new agenda of problems that society has laid before our doctors and our hospitals. Ironically, these problems are largely the product of our past success. For twenty-five years, society gave massive encouragement to medical research, to specialization, to technological development and the growth of larger, more sophisticated hospitals. The results were impressive. But having helped American medicine to progress along these lines, society has been examining the results and finds them wanting in several major respects.

First, society is deeply troubled over the huge costs of medical care. In the last twenty years, the nation's expenditures for health have grown by almost 600% — or at a rate of twelve per cent yearly. Patients who paid less than fifty dollars a day for a room in our teaching hospitals only fifteen years ago must now spend more than four times as much in 1976. Our total health care costs now consume 118 billion dollars a year or 8.3% of our total national income.

Second, society is beginning to doubt how much of an impact these massive expenditures are having on the nation's welfare. Although America spends more than twice as much on health per capita as several other industrialized countries, we do not differ significantly from these nations in most of the com-

This speech was given at the annual meeting of the Beth Israel Association on November 7, 1976, in the sixtieth anniversary year of the hospital.

mon indices of health. It has also become increasingly clear that disease is very often the product of man-made forces and that much more attention must be paid, not just to curing the sick, but to persuading individuals to improve their life styles and to protecting the environment against hazardous contamination.

Third, society has grown increasingly concerned that our medical manpower is poorly distributed to meet the needs of the population. According to numerous studies, there are too many specialists and too few primary care physicians — too many doctors in the suburbs and too few practitioners of any kind in our rural areas and inner cities.

Fourth, the growth of technology and research has given rise to new issues involving the rights of patients. How can the patient be protected against being manipulated and misled in the search for new medical knowledge? Do patients have the right to unlimited use of expensive medical techniques? Must doctors sustain the lives of their patients as long as technology permits, regardless of the quality of the life that is prolonged?

As we study these problems, it is apparent that there is no unseen hand in American medicine that will automatically resolve the issues to society's satisfaction. In one way or another, the government is bound to intervene. Hence, our *fifth* and last major problem is to devise national policies and regulations that will respond to society's needs without doing needless damage to the vitality of American medicine.

Despite the urgency of these issues, there are those who feel that they are not the proper concern of a great medical school. According to these observers, leading medical schools must confine their efforts to research and to the more sophisticated methods of patient care or they will diffuse their energies over too broad a terrain and dilute their capacity to carry out their historic role of pushing back the frontiers of biomedical knowledge.

Now I will yield to no one in my support of basic research, and I have little use for the critics who manipulate our health statistics to argue that a strong research effort is wasteful and unnecessary. I will also concede that there are medical schools so small or so limited in resources that they must make narrow choices in defining their mission. But Harvard has the size and strength to take a broader view. Indeed, Harvard *must* take a broader view, for no professional school can hope to maintain a position of national leadership if it turns its back on what society regards as the major contemporary problems of the profession. For these reasons, I believe that Harvard must make clear its intent to address multiple goals — to continue its traditional role in discovering new knowledge while also responding vigorously to the new problems of cost, of preventive medicine, of health manpower, of patients' rights, and of national health policy.

I am happy to say that Beth Israel, together with other Harvard teaching hospitals, has already begun to grapple with a number of these issues. Your ambulatory care center, your statement on the rights of patients, your protocol on the prolongation of life all give impressive testimony to the sensitivity of this hospital to society's new agenda.

And yet, despite these initiatives, I believe that we will not succeed in responding adequately to the contemporary issues of American medicine unless we make a major shift in the philosophy and practices that traditionally have been followed not only by our hospitals but by Harvard University itself.

For many generations, the University and the Medical School have been characterized by marked decentralization. The Medical School has traditionally enjoyed great autonomy within the University. In like fashion, the teaching hospitals have pursued an independent course marked by strong competition for eminence and academic excellence. This tradition has had many virtues which should be clearly recognized. Decentralization has given power to the grass roots, where decisions can be made by those most familiar with the needs and capabilities of each participating faculty and institution. Competition has provided a healthy stimulus for excellence. The autonomy enjoyed by our teaching hospitals has enabled each to provide a distinctive quality of patient care. These advantages are real and we should preserve them insofar as we can. Nevertheless, the practices that are ideally adapted to one set of problems may not suffice in copying with the new issues that confront us.

The autonomy of the Medical School works well in giving freedom to the dean and faculty to develop excellent programs of teaching and research in the biomedical sciences. But autonomy can also create barriers between the Medical School and the rest of the University — barriers that can interfere with efforts to bring ethics to bear on the rights of patients, to focus the disciplines of economics and management on the problem of devising an efficient health care system, to enlist the methods of statistics for assessing new modes of treatment and new medical technology. Competition for excellence provides a healthy stimulus for improving the quality of teaching and research in our hospitals. But unlike competition among commercial firms, rivalry among hospitals does not reduce costs — it often tends to inflate them by causing duplication of services, by enlarging the size of residency programs, and by proliferating new and expensive equipment.

The moral of this is not that we should seek to impose some new monolithic structure on the University and its teaching hospitals. As I have pointed out, decentralization and competition have advantages that we should seek to preserve as much as possible. What we need is the ingenuity to devise new modes of planning that will preserve the independence of the hospitals while promoting the cooperation we must have in order to deal creatively with a new agenda of health problems. Let me illustrate the point by offering six concrete illustrations.

First, we should enlist the hospitals and the Medical School in a serious planning process to avoid excess capacity and needless duplication of facilities, to promote the efficient sharing of expensive equipment, and to consolidate residency training programs and insure the minimum size required to sustain a high quality effort. The need for such planning is critical. There is no earthly reason to allow each teaching hospital to expend half a million dollars to purchase a new CAT scanner. There is no

reason for every hospital to maintain separate residency programs in each subspecialty of every major clinical department. There is no reason to add patient beds which will inflate costs and intensify the pressure to fill academic posts with physicians whose chief attraction lies in a demonstrated capacity to bring in patients.

Second, we should make greater efforts to encourage the development of well-designed, large-scale tests to determine the effectiveness of medical technology and evaluate new methods of patient care. At present, the growth of new technology is a major factor in rising health costs. From 1971 to 1975, the costs of laboratory tests alone rose from six billion to twelve billion dollars per year. Yet there is no satisfactory means for evaluating new tests and new technological devices in order to make sure that their benefits are worth the cost. Similarly, expensive new procedures are being introduced every month without satisfactorily showing that they bring lasting improvements to our health. For example, thousands of people have already received coronary by-pass surgery at a cost of at least seven to ten thousand dollars. Up to four million persons are potential candidates for this procedure and, under national health insurance, they might succeed in having these operations performed at a total cost to the country of twenty billion dollars. And yet, although some comparative studies have been made, no controlled clinical trials have been performed thus far to determine reliably whether the operation has any significant effect on preserving human life.

Under the leadership of a former chief of medicine at Beth Israel, a promising start has been made to formulate answers to these unknowns through the creation of a Center for the Evaluation of Health Practices. However, there is still a tendency to encourage evaluation of other services and other hospitals while resisting assessment of one's own procedures. If we are really serious about avoiding the use of unnecessary machines, really intent upon reducing unnecessary hospitalization, really anxious to protect our patients from procedures of unproven value, then we should join wholeheartedly in the effort to rigorously evaluate our methods and technology.

Third, there are further opportunities for cooperation in our efforts to reach out to provide new medical services for the community. If these community efforts are to work well, they must have help from other parts of the University that can assess community needs and evaluate the effectiveness of new programs. If we are to meet our needs systematically, without wasteful overlap and competition, we will have to plan carefully and together.

Fourth, we should cooperate in developing model training programs in primary care. The government has already determined that medical schools and hospitals must devote a large share of their residency positions to the education of primary care physicians. What has not been determined is how these residents should be trained. We need to decide how such training can be made intellectually challenging, how we can expose our residents to a variety of clinical settings both inside and outside our hospitals, how we can bring our clinical departments together to provide a training of sufficient breadth, and how we can develop types of research appropriate to general community practice.

Harvard may never become a major source of primary care physicians. But Harvard *can* establish a model for others to emulate and Harvard *can* train the teachers who will carry the model to other institutions. Yet, I fear that we will never succeed in this endeavor without cooperation that goes beyond a single hospital or a single clinical department.

Fifth, we need to work together to develop stronger efforts for the prevention of sickness — efforts to discover the environmental causes of disease and to develop more effective ways of inducing the public to avoid self-destructive behavior. Once again, we can only make real progress if we bring our professors and practitioners together with behavioral scientists, epidemiologists and statisticians in other parts of the University.

Sixth, we have a real opportunity to have a constructive influence on the development of national health policy. Perhaps the government has made mistakes in the past. But we must also acknowledge that the medical schools and the universities have done very little to advise our public officials in developing sound, constructive policies to meet admitted national problems. In retrospect, it is easy to criticize Washington for thinking that it could bring more physicians to rural and inner-city areas by simply expanding the numbers of doctors graduating from our medical schools. It is easy to castigate the Congress for legislating Medicare and Medicaid without enacting methods for controlling costs and preventing abuses. But what did our medical schools or our universities do to help the government avoid these problems?

In the next decade, it is all but certain that Washington will try its hand at creating a program of national health insurance and a method for moderating the growth of health costs. We cannot afford to be silent again while these efforts go forward. Nor can we content ourselves with hasty, last-ditch efforts to defeat misguided government initiatives. The issues are too important and our stakes too great to settle for such a passive role. But if we expect to contribute to the resolution of such complex public issues, we will need to reach beyond the hospitals and beyond the Medical School itself, to enlist the efforts of economists, lawyers and policy analysts elsewhere in the University.

As I have already pointed out, these opportunities do not require a central monolith to make decisions and issue edicts that would invade the independence of the Medical School or its great teaching hospitals. What we do need are ways of planning together so that the trustees of each hospital can make decisions in the light of objective information that will permit them to evaluate their programs and activities with full knowledge of the overall needs of the Harvard hospitals and the opportunities for achieving savings through constructive cooperation. What we do need are better structures to enlist the help of economists, statisticians, ethicists, behavioral scientists and other specialists who can help solve the new health problems I have described. And what we also need are new agencies of limited scope that can perform those functions which can be better done centrally than by each individual hospital.

Some of these structures and procedures exist already. We have recently created a Division of Primary Care to

link the School of Public Health with the various clinical departments and hospitals in a common effort to devise effective training programs. We are close to creating a Division of Social and Preventive Medicine to link the clinical departments to the disciplines of statistics, epidemiology and quantitative analysis. We have a Harvard Medical Center which could provide a forum for hospital directors and trustees to discuss future plans for consolidating training programs, sharing equipment and coordinating plans for new facilities and community services. We have created one central agency to supply our energy needs and another to analyze the effectiveness of medical procedures and new technology.

With these developments in hand, the principal task before us is to summon the will and the energy to work together to make our new structures work.

It will not be easy to develop habits of voluntary planning and cooperation. Our traditions of competition and institutional autonomy are deeply rooted in the aspirations of many capable individuals throughout the Medical School. And yet, the imperatives for cooperation are even stronger.

As I have tried to point out, we must work together if we hope to respond effectively to the new challenges that society has thrust before us. This alone should spur us to action, for a medical school that fails to deal creatively with the principal contemporary problems of health can no longer aspire to leadership.

But there are even more practical considerations that should lead us to cooperate more closely, in our own self-interest.

To begin with, the costs of medicine have grown so great that no private institution can afford the price of waste and needless duplication. We cannot expect continued growth in the share of national resources devoted to health. Instead, money expended for one medical program will increasingly mean the absence of support for some other program. Under these circumstances, funds wasted on excessive or duplicating ventures will rob us of the resources we need to exploit our opportunities to the fullest.

The Feldberg Building, the latest addition to the Beth Israel, was completed in 1976.

Finally, we must respond cooperatively to solve our problems or someone else will solve them for us. It is naive to hope that we will be able to exist as we did in the past with each hospital free to determine its own destiny. If we cannot work together to control our costs, a public agency will control them for us. If we cannot avoid needless duplication and excessive growth, government planners will establish limits for us. If we cannot consolidate and rationalize our residency programs, our residency slots will be distributed for us by public decree.

The consequences of government intervention are all too obvious — decisions flawed by political compromise, regulations that create huge burdens of paperwork and red tape, solutions reached by officials unfamiliar with our institutions who issue rules too rigid and uniform to take account of our special needs.

There will be those who argue that we cannot escape public regulation — and it is certainly true that nothing we can accomplish for a group of Boston hospitals can overcome the national problems that invite public intervention. But it would be most unwise to retreat into passivity and go on doing business as usual. If private institutions make no effort to solve acknowledged problems, they forfeit their right to complain when the government intervenes. We *can* try to have an impact by offering advice on national health policy to a government that is searching for solutions to extraordinarily difficult problems. We *can* try to influence policy by establishing a model of voluntary planning. We *can* set an example in the humane treatment of patients, in the creation of new ways of teaching primary care, in the development of new procedures for making prudent use of technology.

It is not too much to hope that such examples will have a constructive influence on the development of public policy. And it is not too much to hope that federal regulations will allow for the initiative of private institutions that demonstrate a capacity to work effectively to resolve the underlying public issues.

I will, therefore, initiate discussions with the dean, the faculty council, and the hospital directors and trustees to determine how we can cooperate effectively in carrying out the various tasks have described. With time and effort, hope that we can arrive at a common plan for Harvard medicine in the next decade that will strengthen our traditional role in research, in teaching and in patient care, while permitting us to meet the newer problems that society has called on us to resolve. The challenge of the Medical School and its great teaching hospitals has always been to make a whole that is greater than the sum of its parts. Today, the challenge has become a necessity, and we must do our utmost to respond creatively.

With this long look at the future, let me return to the present and congratulate all of the doctors, trustees and friends of Beth Israel who have accomplished so much over fifty years for your hospital and for the quality of medicine at Harvard.

Cancer at Harvard: a matter of growth

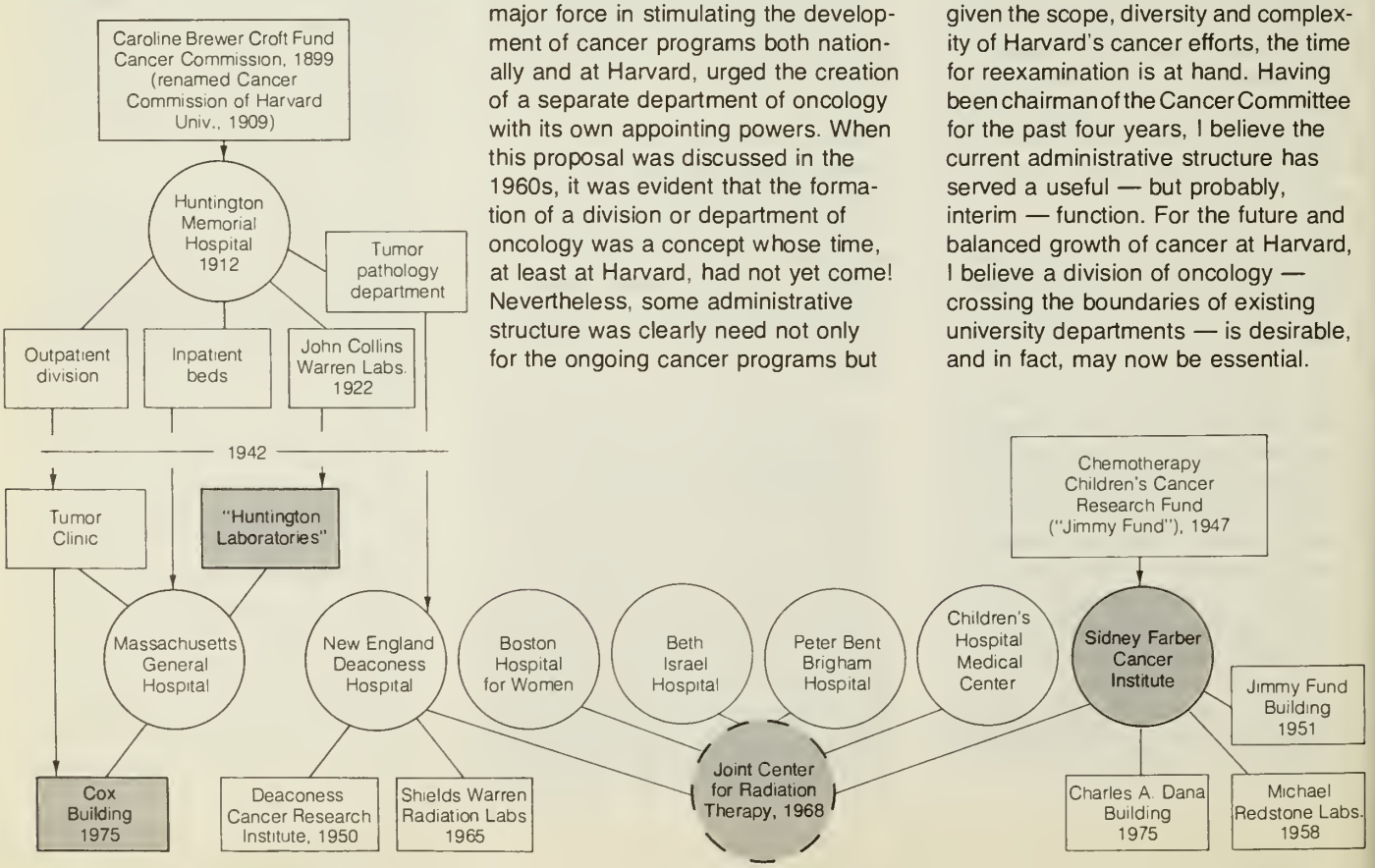
by Kurt J. Isselbacher

Cancer at Harvard is complex and has become increasingly so since the formation of the Harvard Cancer Commission sixty-eight years ago. Oncologic efforts at the clinical, teaching and research levels occur in a great variety of physical and functional settings. Hence to give a simple overview of the many faces and facets of Harvard oncology is difficult. This issue was designed for the edification of the alumni — but presents only four of Harvard's more salient components. Apart from the programs associated with these four entities at certain of the Harvard hospitals, an additional array of separate, in-depth programs is being conducted at some of these same hospitals. Moreover, current epidemiological studies at the School of Public Health utilize case histories from all of Harvard's teaching hospitals. In 1973 there were over 160 discrete research and training programs in oncology in the Medical Area alone (besides the activities of the Biological Laboratories and of other investigators in Cambridge), involving the teaching hospitals, with major participation by fifteen per cent of the faculty at an annual budget of 9.2 million dollars. While not malignant in the neoplastic sense, the growth of cancer at Harvard since 1912 has been progressive, sometimes episodic and perhaps outside the usual University control mechanisms. There have been concerns, especially in recent years, that much like a metastatic process, this growth may be sapping too much of the school's resources at the expense of other vital programs. Questions have been repeatedly raised as to how the growth of this discipline could be controlled and channeled within some rational and appropriate administrative framework.

The late Dr. Sidney Farber, who was a major force in stimulating the development of cancer programs both nationally and at Harvard, urged the creation of a separate department of oncology with its own appointing powers. When this proposal was discussed in the 1960s, it was evident that the formation of a division or department of oncology was a concept whose time, at least at Harvard, had not yet come! Nevertheless, some administrative structure was clearly need not only for the ongoing cancer programs but also to provide for more controlled growth, development and interaction among programs and institutions. In 1972 President Bok and Dean Ebert established a Harvard University Cancer Committee with membership and representation from the various institutes and specialized programs. The Committee has aimed at 1) fostering cooperative efforts and enhancing interaction among our existing oncology activities; 2) bolstering areas of weakness and deficiency; 3) encouraging innovative efforts, preferably of a collaborative and inter-institutional nature; and 4) generating better educational and training programs at the graduate and postgraduate levels. In addressing itself to these challenges the Committee has functioned effectively. New inter-university projects have been created (e.g. with MIT); new medical student courses have been developed; postgraduate programs in clinical and basic science oncology have been revised and others initiated. At the Medical School, a committee for the review of multi-institutional grant applications keeps a file of research in progress.

There is, however, a real question as to whether this type of Committee "octopus" can continue to support the needs of the University community in the years ahead. Opinions remain divided — but given the scope, diversity and complexity of Harvard's cancer efforts, the time for reexamination is at hand. Having been chairman of the Cancer Committee for the past four years, I believe the current administrative structure has served a useful — but probably, interim — function. For the future and balanced growth of cancer at Harvard, I believe a division of oncology — crossing the boundaries of existing university departments — is desirable, and in fact, may now be essential.

Kurt J. Isselbacher '50, the Mallinckrodt Professor of Medicine, is also chairman of the executive committee of the departments of medicine at HMS. He serves as chief of the gastroenterology unit at the MGH.



The pioneer: The Huntington Memorial Hospital

by Paul Zamecnik

Paul Zamecnik '36, whose curriculum vitae is implicit in his description of the Huntington Memorial Hospital and its earlier vicissitudes, is now situated at the Massachusetts General Hospital as director of the Huntington Laboratories. Its formal, correct name should appear, if only once: The John Collins Warren Laboratories of the Huntington Memorial Hospital of Harvard University at the Massachusetts General Hospital.

The once so-called Huntington beds at the MGH have lost that identity; now a significant proportion of patients treated at the MGH have cancer. Research must live up to sometimes unattainable expectations in this regard, according to Dr. Zamecnik, because "pressures for immediate solutions for patient improvement made it harder to uncover subtle features of cell growth and regulation in an orderly fashion. The high cost and third party payments impose a risk in the hospital framework of making the basic scientist a forgotten man. The MGH is conscious of the problem, but it exists."

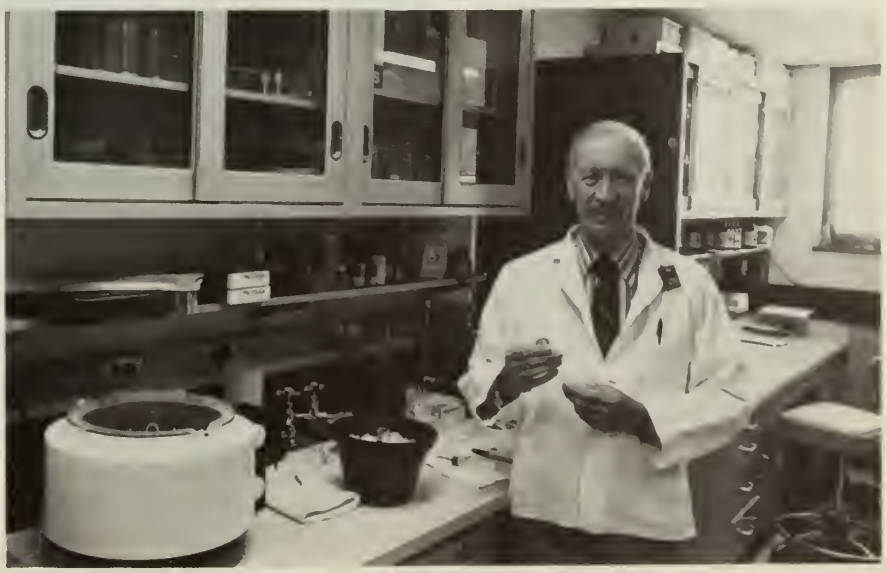
Dr. Zamecnik's own research is concerned with studying a new cell growth regulator compound — diadenosine tetraphosphate (Ap_4A) — that was actually discovered at the Huntington ten years ago. This "appears to play an exciting but as yet undefined role in the proliferative activity of mammalian cells. In current terminology, it may be called a possible positive 'pleiotypic activator' with particularly high levels in tumor cells thus far studied."

The Huntington Laboratories also participate in the virus cancer program of the National Cancer Institute and closer to home, they and the patient care services and research carried out in the Cox Building complement one another since a "strong team is needed in situ."

In June 1936 I rang the bell of the old Huntington Memorial Hospital for Cancer Research, then located next to the Harvard Medical School, on the present site of the Countway Library, and embarked on a new way of life — being fresh from Harvard Medical School and about to put in some time while waiting for an internship. It was a small hospital, with a ten-bed ward for male patients, an equal sized ward for female patients, and five private rooms. Attached were the John Collins Warren Laboratories, conducting research in biochemistry, pathology, biophysics and radiotherapy, plus clinical oncology. The director was Joseph Aub, who had come to the Huntington eight years before to evaluate the colloidal lead treatment of cancer, which had at the time burst on the scene, then suffered a quick demise. Dr. Aub was pleasant and kind, and quieted my uneasiness by professing more interest in the prospect of my teaching his daughters to ski than whether I could get a needle into a vein or feel an enlarged spleen.

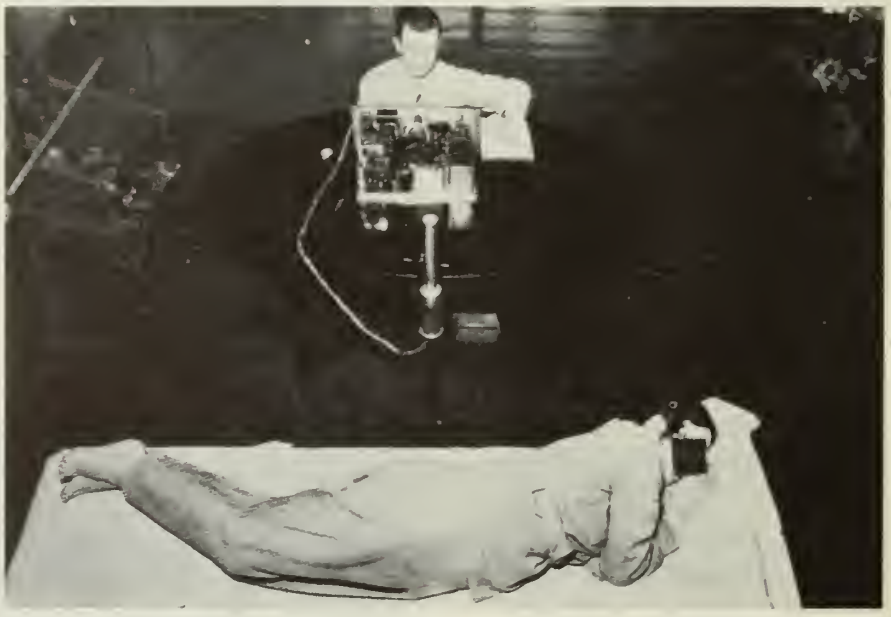
In time I learned that this pioneer hospital for cancer treatment and investigation had opened in 1912 under the aegis of a special cancer commission, staffed by professors from various parts of Harvard University, on both sides of the river, to provide an "opportunity to study cancer in the human being by the use of systematic laboratory methods, such as those used in the study of animal tumors." Through the gift of Mrs.

The Huntington Laboratories have remained an integral part of the MGH, under the direction of Dr. Zamecnik.



The Huntington Memorial Hospital as it looked when Dr. Zamecnik arrived there in 1936. Right, the Huntington Hospital's famed one million volt x-ray apparatus, built by Drs. Robert B. Van de Graaf (left), and John G. Trump (right) of MIT. It was lauded as the first successful supervoltage constant current machine.

Dr. Robley D. Evans of MIT, measuring the total radium C content in the body of a watch dial painter, by gamma ray counting. In long-term follow-up studies, it was determined that as little as one micro Curie of radium and perhaps less was sufficient to induce bone tumors. Safety levels for radioactivity were derived from investigations such as these. Dr. Austen Brues '30, formerly of the Huntington, is still following the clinical course of some of these watch dial painters.



Collis P. Huntington, an amount sufficient to build the hospital (but no more) was secured, and additional gifts from the Boston community made possible the establishment of a modest endowment fund. Research was carried out in various laboratories at Harvard Medical School, where Ernest Tyzzer, an assistant professor of comparative pathology and the first director, established inbred colonies of mice with high and low incidences of spontaneous cancer — being joined in this work by a young assistant named C. C. Little.

In 1922 the John Collins Warren Laboratories were constructed adjacent to the Huntington Hospital, in order to bring the research component into closer contact with the patient population. Early highlights of Huntington research include the development of high voltage x-ray therapy and the Minot and Murphy classic treatment of pemicious anemia by a liver diet.

Let me digress with a few stories before going on to more serious aspects of the life and death of the Huntington Hospital.

At the time of my arrival, plans were under way for construction of a new mil-

"The effect of fragmentation of the cohesive small Huntington Hospital clinical and laboratory staff was, however, a serious loss."

lion volt x-ray therapy machine designed on the Van de Graaff principle by John Trump, a young physicist from MIT. Electrons were sprayed onto a moving belt which carried them up to be stored in a huge aluminum doughnut. The degree of charge was estimated in a rough way by John Trump, who would hold out a long pole, surmounted by an aluminum ball, with a ground wire dangling from the lower end of the pole. As the aluminum ball approached the charged aluminum doughnut, a sharp crack of lightning leapt the gap in Franklin-like fashion, providing terrifying and convincing evidence of the high voltage charge being generated. Visitors invited to participate in the demonstration politely declined, which was just as well, since John Trump was knocked to the ground one moist day.

Joe Aub was a recognized national expert on lead poisoning, and on radium poisoning as well, due to his interest in watch dial painters, and the close relationship between radium and lead. One day a professor of physics arrived in a hurry from Princeton, asking to be deradiumized if possible. There had been a small explosion of a radium salt in his laboratory, and he suspected that he had inhaled some of the radioactive dust. "And where were you standing at the time of the explosion?" I queried in taking his history. "Right behind my technician," he answered, "looking over her shoulder." "And where is your technician now?" I asked. "Back in the laboratory working," he replied.

Alfred Calhoun, a young associate of Joe Aub, was working on lead poisoning by studying the problem in dogs. As a definitive experiment, he injected $2,000 worth of radioactive lead into a dog, which promptly died. In 1936 this was a large sum of money, and Joe Aub asked Alfred to recover the radioactive lead. Several weeks of autoclaving and incinerating followed, and at last the radioactive ashes rested in a small crucible on Alfred's desk. The next morning the cleaning woman threw them out. Joe Aub was insistent, and a group from the laboratory set off for the city dump, armed with an electroscope. With luck, a bushel basket of dirt containing a fair share of the radioactive lead was recovered. Somehow the fun had run out of the experiment, however, and Alfred Calhoun moved on to fresher pastures. In fact, eighteen years elapsed before the results of this work were published.

As the years progressed in the mid-thirties, the Huntington Hospital found it increasingly difficult to provide high level complete care to hospitalized patients. With twenty-five inpatient beds and a "full-time" staff consisting of two third-year Harvard Medical student house officers, a medical resident and a surgical fellow, the coverage was fragmentary and the backup facilities for serious illness too thin to permit continuation of the hospital as a separate free-standing unit. Three choices appeared feasible: 1) to raise money to construct a larger, more adequate cancer hospital; 2) to close the hospital and move the laboratories to the relatively empty new biology building on Divinity Avenue in Cambridge, thus becoming a mouse cancer research group; and 3) to move the laboratories to one of the major Harvard-associated hospitals, and then amalgamate the impressive Huntington outpatient clinic (the largest in the New England area) with those of the same hospital. The last alternative was chosen, and in 1942 the Huntington Laboratories became an inclusion body devoted to cancer research within the framework of the Massachusetts General Hospital.

There were both advantages and defects in the new arrangements. The Huntington Laboratory group provided the first strong basic science research unit within the MGH, and its facilities and know-how catalyzed the solid growth of medical science in various departments at the MGH during the postwar years. The effect of fragmentation of the cohesive small Huntington Hospital clinical and laboratory staff was, however, a serious loss. The strong tumor pathology unit under Shields Warren moved to the Deaconess Hospital, and research in radiation physics with John Trump returned to MIT and established clinical ties elsewhere. Thus the opportunity for further technical developments in the supervoltage therapy field were diminished — in spite of the fact that Milford Schulz came down to the MGH, and nearly alone provided a bulwark of strength in the neglected field of radiotherapy. The value of having separate beds for cancer patients was also underappreciated in the new surroundings, so that the diffusive effects of patient scattering and the difficulty of organizing a chemotherapeutic program prevailed. In short and sad to relate, the focus on the cancer problem, which the vision of John Collins Warren and the now defunct Harvard Cancer Commission had created through a pioneer effort starting in 1912, was largely dissipated in the Harvard community by the early '50s.

This loss began to be felt during the next generation, and the development of the Jimmy Fund and the Farber Institute have provided a recreation of the Huntington Hospital spirit, in the environs of the quadrangle. Later, but with a similar mission, the Cox Center at the MGH has risen to complement the Huntington Laboratories and to fill a need for closer coordination of the efforts of surgery, medical chemotherapy, and radiotherapy.

The war years of the Huntington Laboratories at the MGH were devoted to work on shock, and among other findings significant in their time but since forgotten, a scientific fringe benefit came about in the following way. A number of volunteer medical students had been given a small amount of radioactive iron in order to tag their erythrocytes, and they had agreed to serve as blood donors for patients coming into the MGH in traumatic shock. Unfortunately, even in the instance of the Coconut Grove disaster, no such clear-cut cases appeared, and in time the iron-tagged students were about to graduate and depart for internships and war theaters. It was an unfulfilled moment for this experiment, when suddenly Joe Aub suggested that the labeled blood might be stored under varied conditions, and its survival time studied on reinfusion back into the donors. The results clearly showed that the blood immediately refrigerated and kept cold had the longest half-life, as compared with blood from the same donor kept at room temperature or in a warm room. The Navy accepted this finding promptly, and flew blood to the war fronts in refrigerators, while the Army ignored the lesson for some time, refrigerating the blood on arrival at its destination, thus saving on weight on the air flight.

The most exciting finding of the '40s in the Huntington framework was the observation by Ira Nathanson of the sen-

Going to the source: Shields Warren '23

If you want to know, go to the source. The *Bulletin* wanted to know more about how these Harvard institutions devoted to cancer came into being, and the best source, quite naturally, was one who had been present at the creation of so much of it — Shields Warren '23, emeritus professor of pathology at the New England Deaconess Hospital.

In giving his account of these matters, Shields Warren immediately took us back to another Warren, no relative, but a descendant of Joseph Warren of Bunker Hill fame and of other medical Warrens. This was John Collins Warren, surgeon and pioneer in cancer biology, who enlisted the interest of Harvard's President Eliot and became chairman of the Caroline Brewer Croft Fund Cancer Commission, when it was formed in 1899. The Commission, renamed the Cancer Committee of Harvard University in 1909, obtained generous financial support from Collis P. Huntington and founded the Huntington Hospital, opened in 1912, and its research unit, the John Collins Warren Laboratory, opened in 1922.

In 1927 Shields Warren succeeded James Homer Wright as pathologist in chief at the Huntington Hospital, becoming at the same time pathologist at the New England Deaconess Hospital. In 1942 the Huntington Hospital underwent mitosis and spread to other institutions: the outpatient department joined the Tumor Clinic of the Massachusetts General Hospital — and has recently metamorphosed into the Cox cancer management center, the inpatient services continued as designated Huntington beds in the MGH, the John Collins Warren Laboratories became the unit of the MGH described here by Paul Zamecnik '36, and the pathology department went to the New England Deaconess Hospital with Shields Warren. A rather special aspect of the pathology department, the Tumor Diagnostic Service initiated under John Collins Warren's impetus in 1918 as a free service for Massachusetts physicians, continued in other quarters under Shields Warren's leadership.

Shields Warren is famous for his work on thyroid disease and diabetes, but most of all for his pioneering observations on the pathology of radiation. All of this began in 1923 when, as a resident at Boston City Hospital under Frank Mallory, he performed autopsies on patients thought to have died of cancer after intensive x-ray treatment — and found not cancer, but the effects of radiation. His work in this area continued through the Huntington years, and was an important component of the Cancer Research Institute at the New England Deaconess Hospital founded by him in 1950 and focusing initially on radiation pathology. In the years since, its research has expanded to encompass immunobiology, biochemistry, enzymology, and metabolic and nutritional aspects of cancer. This work continues today under the leadership of William V. McDermott '42, Cheever Professor of Surgery and director of the Harvard surgical service at the New England Deaconess Hospital.

It was apparent to Shields Warren, however, that research in radiation was worthy of a major center of its own in Harvard Medical School. His energy in pursuing this idea, and the generous support of the Deaconess Hospital, eventuated in the institution now known as the Shields Warren Radiation Laboratory, adjacent to the Dana Center. This laboratory, under the administration of Henry Kohn '46, houses research in radiotherapy conducted under the auspices of Samuel Hellman, director of the Joint Center for Radiation Therapy; research in radiodiagnosis under the auspices of Herbert Abrams of the Peter Bent Brigham Hospital; research in nuclear medicine under S. James Adelstein '53, director of HMS's joint program in nuclear medicine at the Peter Bent Brigham, Children's Hospital Medical Center, and Sidney Farber Cancer Institute; and Dr. Kohn's research in radiobiology.

So energetic a man as Shields Warren could not be expected to abandon the chase to others — and he has not. Still at the Deaconess — it was fifty years on February 1, 1977 — he occupies a small office in the building named after him and in his laboratory works with rats and mice on radiation carcinogenesis, especially the mechanisms of response to x- and gamma-radiation, comparing the effect of whole body exposure with radiation of limited fields. He is busy as a consultant in the field of aeronautics, and he is not fearful of the future — reassuring this editor that "the danger of nuclear power plants is less than that of pedestrian exposure to traffic on Brookline Avenue"! — G.S.R.

sitivity of certain carcinomas of the breast to estrogenic hormones. I well remember the mix of giddiness and disbelief which came over me day by day as I felt a carcinoma *en cuirass* melt away in an auspicious instance. This was the beginning of a quarter of a century of research on the mechanism of action of the steroid hormones by Lewis Engel, who joined the Huntington at the time, and the start of the career of Rita Kelley, who with skill and devotion has followed the intricacies of therapy of cancer of the breast ever since.

Joe Aub (and the writer too) believed in the '40s and '50s that the time for a frontal assault on cancer via chemotherapy was still not at hand, and he oriented the major thrust of research at the Huntington toward a study of the regulation of growth — in an effort to uncover varied factors responsible for the balance of normal growth, and for its defects in the irresponsible growth of malignant tumors. Thus he looked with approval on our efforts to study the basic mechanisms of protein synthesis. With the combined efforts of a group of talented investigators, the foundations of present knowledge of the machinery of protein synthesis were laid in the Huntington Laboratories in the decade beginning in 1950. At the same time the first cell-free system for the study of cholesterol synthesis was worked out by Nancy Bucher.

New findings came out of this horn of scientific plenty within a few years: the first cell-free system for studying protein synthesis, the requirement of energy to activate the amino acids, the discovery of the aminoacyl synthetases, the discovery of transfer ribonucleic acids, the recognition of the role of the ribosome, and the requirement for guanosine triphosphate and polypeptide polymerizing enzyme(s) for the peptide elongation step. Suddenly, however, the cascade of exciting new information from this laboratory slackened, as the field of protein synthesis broadened and deepened, and it became difficult to keep up with the pace of observations coming from numerous parts of the world.

During the last decade the field of molecular oncology was born, a fusion of two scientific streams — molecular biology and oncogenic virology. Let me touch on the origins of this highly active area of research, of which we are a part. Particular impetus came from the discovery of the reverse transcriptase in tumor viruses by Temin and Baltimore in 1970. It has also become possible to isolate the genetic ribonucleic acid chains of a variety of RNA tumor viruses, and, from the work of several laboratories, to assign functions to regions of the chain of 10,000 nucleotides, situated inside the virus, that is transcribed into DNA, integrated into the genes of the host cell, and then utilized as genetic information along with the varied genetic instructions from the host cell. In this way the incoming viral information is built permanently into the genetic make-up of the unfortunate host cell, and transformation to a neoplastic cell is the consequence of the readout of the viral replicating information blended cunningly with that of the host cell. It would appear that the neoplastic transformation — which includes a permanent continuation of the growth potential of a cell — may be essential for replication of the oncogenic virus.

Our laboratories at present consist of thirteen professional and twenty-two supporting staff, and occupy two floors of the Jackson Tower at the MGH. Both basic and clinical enterprises are being pursued, with the former predominating. In order to work in both molecular biology and viral oncology, we have been obliged to have a specially constructed animal facility to keep viruses, animal hosts, investigators, ventilation, and disposal facilities safely separated from contact with the general flow of hospital activities. Special viral hoods, use of gloves, and other precautions have also become necessary within segregated parts of the laboratories themselves.

Let me describe in brief some of our current research activities and our interplay with other investigators in the Harvard community. To begin with, we have lately been engaged in the difficult pursuit of beginning to determine the primary structure of the RNA of Oncorna viruses. The most convenient sources of such viruses are the Avian Myeloblastosis Virus, present in the nearly incredible concentration of 1×10^{11} virus particles per milliliter of infected chick plasma, and the Rous Sarcoma Virus, which may be grown expeditiously in tissue cultures of chick embryo cells. This investigation is interesting in its own right, and also illustrates how Harvard laboratories can complement talents in a collaborative way.

Several years ago, Dr. Mary Stephenson and others of us found that the 3′-end of the genetic RNA of Avian Myeloblastosis Virus was terminated by a polyadenylic acid tail, similar to the situation found at the end of other messenger RNAs. This feature made it possible to use a specially constructed and suitably modified complementary oligodeoxythymidylic acid primer to bind to the polyA termination piece to make a DNA copy of this end of the viral genetic RNA, with the help of labeled deoxynucleoside triphosphates and the reverse transciptase. In this way our colleagues Drs. Lee Weith and Dennis Schwartz have, in as yet unpublished experiments, determined the sequence of the first twenty-one nucleotides inside the polyA tail at the 3′-end of the Rous Sarcoma Virus. Simultaneously, Drs. Walter Gilbert and Allan Maxam of the biochemistry department of the faculty of arts and sciences and Dr. William Haseltine of the Sidney Farber Institute have determined the sequence just internal to the 5′-terminal cap of this same RNA, a distance of 10,000 nucleotide residues away from the 3′-end (also unpublished work). The nineteen to twenty-one nucleotide residues near both of these ends of the RNA are, astonishingly, identical. These spectacular concurrent findings explain how the DNA that is synthesized by the viral reverse transcriptase in the infected cell can, as described below, form a circular intermediate, as recent electron microscopic studies have shown it to do.

That a circular intermediate is a logical step in the mechanism of integration of viral DNA into a host cell is established from studies of phage and bacteria. The explanation for the circular intermediate in the case of the oncogenic RNA virus is that nineteen to twenty-one deoxynucleotides synthesized in the early part of the copying at the 5′-end of the viral RNA are complementary to nineteen to twenty-one ribonucleotides present at the 3′-end of the same molecule. Through Watson-Crick pairing occurs the stickiness to form a mixed DNA-RNA circle, in this way allowing the re-

verse transcriptase to complete its job of copying the 3′-end plus the subsequent major portion of this genetic RNA molecule. A complementary copy of the newly synthesized DNA is next made, and this double stranded, circularized piece of DNA comprised of viral information, is now inserted into the DNA of the host cell. A moment of thought concerning this process will suggest that the oncogenic viruses have beaten the new breed of molecular biologists to the punch in the genetic recombination field. When I was a student at HMS we didn't have to worry about such things — delivering babies on the District Service was our hairiest problem.

The new, as yet unpublished, DNA sequencing technique that Maxam and Gilbert have devised makes it possible to probe more deeply into the central part of the oncogenic viral RNAs than has heretofore been possible. It is known that within the first 2,000 nucleotide residues, beginning at the 3′-end of this oncogenic RNA molecule (designated "35S RNA") is located a region responsible for transformation of the host cell. Other parts of this RNA code for features of the virus itself, and are thus less exciting than this "sarc" or "onc" region. Within the next few years it may be predicted that despite the technical difficulties the nucleotide sequence of the sarc region will be determined, and a new level of understanding of the neoplastic process will be uncovered. Thus within the Harvard framework, for example, we look forward to a collaboration in which our laboratory will supply oncogenic viral RNA and specially tailored primers for the reverse transcriptase-copying procedure, while Gilbert and Maxam's laboratory will lead the way in sequencing the labeled complementary viral DNA formed in this *in vitro* copying system.

As a few final remarks, let me express the view that it appears clear that environmental carcinogens are a major factor in the human disease. Nevertheless, the field of viral oncology provides exquisitely fine biological tools with which to probe the inner workings of the cellular growth machine. It is also reasonable to consider that certain types of human malignancies will be shown to be of viral origin. Burkitt's Lymphoma, nasopharyngeal carcinoma, Hodgkin's disease, and the leukemias are prime suspects.

The three dimensional structure of transfer RNA was recently worked out by Dr. Alexander Rich '49 at MIT. This molecule was discovered in the Huntington Laboratories twenty years ago and serves as an important translation piece in genetic coding. The model is courtesy of Dr. Rich and shows this biologically exciting molecule very much resembling modern sculpture.

Our own private suspicions rest on the following basis. For some years Dr. Alan C. Aisenberg of these laboratories and the Lymphoma Clinic, Dr. John Long of pathology, and I have been studying the etiology of Hodgkin's disease. We have been able to grow tumor nodules from approximately thirty Hodgkin's spleens in tissue culture, and to make transplants into nude mice, with growth of these human cells to a lethal outcome in the mice. These cultured cells express an unusual antigen on their cell surface, which they also secrete into the tissue culture medium — an antigen thus far quite characteristic of Hodgkin's disease, either present in tiny amounts in non-Hodgkin's cultures or perhaps absent altogether. We have in addition identified both a virus of the Herpes family in a number of these Hodgkin's disease tissue cultures, and on occasion have found C type viruses after careful search by electron microscopy as well as by reverse transcriptase assay.

As in other research enterprises, by-products sometimes become main products. This is the lesson learned from a combined study involving Dr. Nancy Bucher of these laboratories and the gastrointestinal unit at the MGH. As a result of Dr. Bucher's investigations of the effect of glucagon and insulin on regeneration of the rat liver, an active collaboration with Drs. Jack Wands and Kurt Isselbacher has developed, in which it appears that these above two hormones have a strikingly beneficial effect on fulminant murine viral hepatitis. Studies are now under way to apply these concepts to the comparable human disease.

In cancer research within the next years, it will be necessary for investigators to understand and use the tools of virology, immunology, biochemistry, and molecular biology in order to add to present basic knowledge. All of these disciplines are present within the Harvard University framework. Whether they can be used effectively and in concert as needed remains to be seen.

A new design philosophy: The Cox Building

by Howard Ulfelder

In 1968, the priority for construction at the Massachusetts General Hospital, was an ambulatory division for cancer patients that would be the first facility at the hospital to adhere to the principle of one level of care for all. Howard Ulfelder '36, Joe V. Meigs Professor of Gynecology and then head of the department at the MGH, had been associated with this project from its inception, some ten to fifteen years before. Appointed chairman of the building committee, Dr. Ulfelder's main role was raising funds for the construction of the Cox Building. He is especially proud of the new design philosophy that stresses the interior aesthetics, and which, he has found, "reassures the majority of patients, who seem to equate the fact that we were interested enough to attend to their comfort, with the availability of expertise for their care."

Dr. Ulfelder was also instrumental in planning how the various clinics would be organized, considering, for example, that medical oncology at the MGH had been a series of unrelated doctors' offices, some more organized than others. The purpose of the Cox Building, however, was not just to provide new quarters for previously existing facilities, but rather to "see what cancer would require of a hospital ten years from now." In the process of supervising the move into the building, Dr. Ulfelder assumed the new title of the deputy director for cancer affairs. He is involved with the clinical program, with some aspects of the research program and applications for its funding, and with the administration of the "only building at the MGH that has a disease-oriented designation."

Not too strongly identified with any one of the disciplines related directly to cancer, Dr. Ulfelder feels that this was a plus in that within the Cox Building, radiation therapy, various facets of chemotherapy, surgical oncology, and research can all be equally emphasized in a beneficial environment for cancer patients.

Eight years ago, during the course of planning new quarters for an overcrowded department of radiation therapy and the Tumor Clinic, the opportunity presented itself to review the entire panorama of cancer activities at the Massachusetts General Hospital. We found, as we expected, that every necessary or appropriate and desirable aspect of research, diagnosis and treatment was represented already at the hospital, but that the logistics of utilization was sometimes awkward and communication between offices, clinics and laboratories often meager. The planning committee proposed and the trustees agreed that any new construction or renovation should emphasize the following opinions:

- that in contacts with the medical world the cancer patient would most often be in ambulatory status as a visitor or transient and that this would in the future be even more the case.
- that the involvement of several kinds of special professional knowledge and experience — the multidisciplinary approach — was necessary for optimum care and that this would be used for all cases, starting with the stage of treatment planning.
- that the ambience which framed these activities, including the attitude and behavior of professionals as well as the physical environment, played an enormous role in the support of patient and family confidence, in their ability and willingness to reestablish normal or nearly normal patterns of life, and in husbanding their energy and patience when these reserves were low.

With these objectives in mind, the Cox Building was designed to accommodate the entire department of radiation medicine and its awesome equipage, the Division of Medical Oncology, the Tumor Clinic and Registry, and some

The lobby of the Cox Building is graceful and quiet. Banquettes are molded to the curving outside brick wall, which becomes tall glass panels just above eye level. It is full of natural light, enabling oversized foliage plants to grow easily. In back of the upper louvered wall is the waiting area for chemotherapy patients. The circular stairwell leads to the radiation therapy treatment rooms.

activities of Surgical Oncology as well. Laboratories for all three oncology units and for physics and pathology are located on the upper floors of the same building with the deliberate intention that this geography would not only facilitate rapid convocation of multiple experts when appropriate, but also provide a constant mix of laboratory and clinical personnel that could not avoid provoking frequent informal communication and germinating ideas.

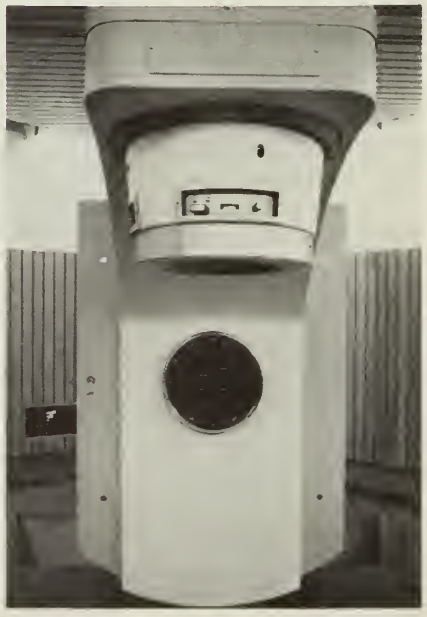
The pattern of patient movement throughout the building received special attention. Only on the lower level, ground floor, and second floor does the hospital staff deal directly with patients, and therefore the aesthetics of foyers, entrance halls, and waiting areas have been designed to be pleasing and minimize stark functionalism, particularly the "hospital look." Long walks and tedious waiting are avoided as much as possible. The truly sick or failing patients are not paraded before the generally well; they enter by chair or wheeled stretcher through another entrance or by an elevator accessible directly from the off-street driveway. Both social and psychological support personnel are in residence; every practicable step has been taken to keep delays, confusion, misunderstanding, and tiring multiple appointments or repeat visits to a minimum.

The hospital now encounters more than four thousand new patients with cancer each year. Over half will sooner or later be seen or treated by the medical oncologists and almost half at some time receive treatment by radiation therapy; many, of course, become involved in both. Programs are constantly modified and new features are incorporated as they demonstrate effectiveness. It is a complex and changing affair and for best results requires a spectrum of technical skills, apparatus and drugs that can be justified only by the volume of the demand. In radiotherapy, for example, as wide a variety of specially trained physicians and individualized equipment is available as there is in surgery, where we have come to expect quite different facilities for thoracic, neurosurgical, urologic, orthopedic, and other types of procedures if best results are to be achieved in all situations.

As sections of the Cox building, were completed and equipped, beginning in the spring of 1975, they immediately began functioning. The first was a cobalt unit for radiation therapy chiefly for patients with cancer of the breast; it has since been followed by a second cobalt unit of somewhat different capabilities, and then a linear accelerator. Even with these operating, the installation continues of additional high energy units as well as the orthovoltage equipment used for the treatment of superficial lesions. All the necessary facilities for patient care such as simulators, the mold room, examining spaces, and so on are located on the same level in keeping with our original philosophy of concern for the convenience of the patient. On the third floor are the offices for the department and on the sixth and seventh, the laboratories where Dr. Herman Suit and his colleagues conduct the research programs in radiobiology and physics for which the unit is recognized. Worthy of special mention are the breeding and housing facilities for purebred strains of mice that are maintained continuously pathogen-free and in a defined flora status. This stratagem, by virtually eliminating sepsis, makes it possible for scientists to study the effects of radiation exposure or any other debilitating maneuver with much less risk of confusing or complicating their ability to evaluate results in sound statistical terms.

On the second and sixth floors of the building, medical oncology, for the first

Dr. Ulfelder's office is on the first floor and is adjacent to the offices of the staffs of medical and surgical oncology. Because it was felt that hospital staff should not be walking or conversing in front of patients, there are two parallel corridors; the examining rooms are in between, each of which has two opposite entrances. At far right, the nurses' station and the hallway used only by the staff. At right, the original Tumor Clinic in 1937, when it was located in the Red Building, which was torn down that same year and replaced with the White Building. Besides the outpatient department, radiotherapy techniques were performed in this limited space, not very conducive to patient comfort.



The 35 MeV machine, which is being installed and tested now under the responsibility of Dr. Edward R. Epp, head of the radiation biophysics division in the department of radiation medicine. This machine produces high energy x-rays (25 MV) and electrons (34 MeV); the former penetrate effectively to deep-seated tumors, such as those in the pelvic region. Consequently, a higher proportion of dose can be delivered to the tumor site relative to the normal tissue unavoidably radiated.

"Multidisciplinism is most apparent on the first floor, where the old Tumor Clinic has emerged from its chrysalis as the Cox Ambulatory Services."

time since the halcyon days of Ted Nathanson's leadership, has once again established a home for much of its clinical, training and research activities. Drs. Rita Kelley, David Sohier, Robert Carey, Sheldon Kaufman conduct what must surely be one of the busiest group practices in the hospital, particularly in the matter of "corridor" and telephone consultations. Their area on the second floor is designed to accommodate the entire range of medical oncologic practice whenever it is safe and feasible on an outpatient basis. By appropriate planning and scheduling this has permitted the administration of extremely sophisticated chemotherapy, both adjuvant and palliative, to an increasing number of patients. In view of the multiplicity of programs in use today this is a welcome advance towards greater efficiency and economy.

The laboratories on the sixth floor have just become operative under Dr. Thomas Stossel, the new division chief. They are adjacent to and share some facilities with those of surgical oncology, where Drs. William Wood and Alfred Cohen study and apply their understanding of the immune mechanisms to animal and human tumors. The pathology of immune processes and the research questions it seeks to answer are under intensive study on the fifth floor where Drs. Ann and Harold Dvorak have installed their laboratories and an animal farm is in construction on the eighth floor for the support of all these researches.

Multidisciplinism is most apparent on the first floor, where the old Tumor Clinic has emerged from its chrysalis as the Cox Ambulatory Services. Medical, surgical, and radiological oncologic attentions are offered continuously, but in addition each clinical department has the use of the facilities during a scheduled time each week. This ensures that the different groupings of cancer patients will be seen and managed by interested and qualified staff members. This arrangement is also of great benefit to our varied training programs, but best of all it gives the specialty staffs an incomparable opportunity to consult with others whose time is all spent in oncology and in the building. It means that the design and equipment must be multipurpose, that lights in the examining rooms, for example, must range from a system that is acceptable to a dermatologist to one that properly illuminates the larynx.

The spacious fifth-floor laboratory of the Doctors Dvorak.

Although administratively the units are not so ordered and restricted that the building can be designated a center or institute, in a very real sense the structure embodies the architectural expression of multidisciplinary cancer care.

For the MGH as a whole, inpatients — predominantly surgical cases — form the greater part of cancer care at any given moment. These and other large

elements of our cancer program should never become incorporated into the ambulatory facility, but we can provide ready access to diagnostic radiology, clinical and tissue pathology, nuclear medicine, hematology, and many other necessary components of the total picture. Pediatric and hematologic malignant disease have their own places of management and much cancer care is rendered in private offices of the MGH and the Eye and Ear Infirmary staff.

Research in cancer is very much a part of the activities of this acute care general hospital. The Huntington Laboratories and many others have contributed to the solution of a number of basic problems, but the MGH is, of course, also able to initiate and foster clinical research of all kinds. In their simplest form such studies are engendered wherever a tumor registry is developed that at once easily provides data on all cases seen. Through the Tumor Clinic here, officially inaugurated in April 1925, reports have been generated that reviewed the case material in cancer of the breast, stomach, colon, uterus, cervix, ovary, vulva, vagina, larynx, pharynx, esophagus, and other sites too numerous to mention, as well as papers dealing with disease entities like leukemia, lymphoma, melanoma, bone and soft tissue sarcomas. Valuable conclusions have been reached in staging and treating these diseases as well as useful leads in facilitating detection and diagnosis, in identifying etiologic factors, and in improving end results both palliative and curative.

Over the years this type of case review study has undergone modification and refinement, much of it in efforts either to scrutinize selected questions or to control the composition of the group in order to characterize the effect of specific variables in statistically meaningful terms. Currently, and most particularly in the area of cancer therapy, there are in progress a number of protocol studies emphasizing prospective investigation, identical treatment patterns for all patients, proper controls, and the simultaneous involvement of many institutions in order to amass large numbers of patient profiles quickly.

Progression from straightforward case analysis and on through controlled investigation, leading to prospective clinical protocol studies and the laboratory bench is illustrated by our experience with the stilbestrol disorders. The first formal study in this new area was a description of all seven cases of adenocarcinoma of the vagina in adolescent girls seen and treated by my colleagues and myself between 1966 and 1970. The unusual histology was defined, the association with benign adenosis documented, and the geographic and chronological clustering noted. No common factor was identifiable, however, until I was told as an addendum to the history in one case that the mother had been treated with diethylstilbestrol during her pregnancy. Several others, on questioning, related the same experience, which led me to conclude that an epidemiologically structured and controlled inquiry into all possible causative or associated factors was necessary in establishing once and for all the validity of this very suggestive anecdotal observation. This study fully confirmed the suspected association and was soon followed by others, including the reports from a registry established to assemble and document cases from all over the world, and investigations of young women known to have been exposed to DES for the presence of the benign abnormalities of vaginal adenosis and squamous metaplasia.

This latter concern is of such importance that prospective comparison with controls has been employed to provide statistical information with respect to incidence and correlations with timing and dosage. One such investigation usefully focused on a series of patients treated for high risk pregnancy in the early days of this regimen; another current study follows a protocol designed and accepted by four collaborating institutions — MGH, University of Southern California, Mayo Clinic and Baylor University Hospital — which will be applied to five hundred women from each clinic who volunteer for careful study and long term follow-up. It is hoped by this means not only to illuminate the natural history and perhaps the progression or regression of these disorders, but also to identify environmental or other factors that may affect these changes.

Interest quite naturally has been aroused in the fate of stilbestrol in human tissues and therefore its metabolism is also now being analyzed by biomolecular methods. Most recently the abnormal histology of the vagina in this condition has been noted to be identical with that seen in another anomalous situation in which Mullerian duct epithelium alone serves as the precursor without a contribution from

In this circumferential design, the treatment rooms are on the periphery. Behind the partition is one set of changing rooms, placed such that the patient need not walk in front of everyone else on the way to the assigned treatment room. There are five radiation therapy units —two Cobalt machines, two medium high energy linear accelerators and the 35 MeV machine (not expected to be used for patients until the fall).

Left, the bronze sculpture entitled "Triumph," symbolizing the courage of the human spirit, was presented to the Cox Building by the artist Robert H. Cook, Jr., in memory of his sister, Bettina Ware, who died September 17, 1974. Toward the end of her life, Mrs. Ware, a cancer patient at the MGH, set about cheering others suffering from cancer. Below, the Cox Building, which is actually long and rather narrow, seen from across Storrow Drive.

the urogenital sinus. One can see at once the implications for embryology; and the fundamental question of the origin of human vaginal epithelium, until recently a source of real difference of opinions, now appears to be answered.

Every conceivable kind of affiliation, formal or informal has developed between the MGH and the surrounding medical community over the years. Much of this has the goal of improved care for individual patients, but with increased frequency joint programs are coming into existence for student, staff, and technical education and for investigating methods of delivering care as well as the results of treatment. For the Harvard-affiliated institutions, the unifying effect of serving on one faculty responsible to one dean has encouraged collaborative efforts. Such a joining of skills and sharing of information has been and will continue to be productive. For example, in the stilbesterol studies one case of the eight that were studied epidemiologically was from the Peter Bent Brigham and the entire group of women investigated prospectively for benign anomalies resulting from fetal exposure was from the Boston Hospital for Women. Consultation has also been notable with the departments of biochemistry and preventive medicine at the Medical School.

Yet such occasions are determined almost by chance and wait upon initiation by one or another of the involved investigators and require that he or she have some inkling of where to turn for assistance. More significant, perhaps, are a number of activities that include representatives of many departments and hospitals in their meetings and deliberations, and which are intended to correlate resources and properly design programs which, otherwise, might result in unnecessary and inefficient duplication of efforts or undetected contradictions and omissions.

With the opening of the Cox Building the MGH joins other institutions of HMS in recognizing two concepts: that the cancer patient requires a separate and specialized environment and that multiple specialties must be brought together in that patient's care. We believe that in institutionalizing these concepts we have built well for the future, until such time as cancer can be prevented or cured by simple means.

The Jimmy Fund comes of age: The Sidney Farber Cancer Institute

by Emil Frei III

Dr. Emil Frei came to Boston from Houston to head the Sidney Farber Cancer Institute in 1972, and was appointed professor of medicine at the Harvard Medical School that same year. In charge of a staff of six hundred, Dr. Frei himself is on the staffs of the five Longwood area hospitals (Peter Bent Brigham Hospital, Children's Hospital Medical Center, Boston Hospital for Women, New England Deaconess and Beth Israel hospitals), and much of his core staff will frequently rotate to these hospitals.

The official name of the Dana building, where Dr. Frei has his office on the eighteenth floor, is the Charles A. Dana Cancer Hospital and Research Laboratories. Speaking about Sidney Farber's original vision of a cancer hospital, Dr. Frei believes that "the major future advances in the treatment of cancer will most likely come from chemotherapy and immunotherapy," although the modalities of surgery and radiation therapy will of course be involved as well. As director of laboratory research at the Farber Institute, he spends much of his time consulting with both basic scientists and clinicians on their work. Dr. Frei, who "grew up in cancer centers," spent the last ten years consulting at the National Cancer Institute. During the same period, he was associate director and head of clinical research in the department of developmental therapeutics and professor of medicine at the University of Texas M.D. Anderson Hospital and Tumor Institute in Houston.

Thirty years ago, in the pathology laboratory at Children's Hospital, Dr. Sidney Farber was carrying out pioneering research in the chemotherapy of childhood neoplasia. His success with the folic acid antagonists in inducing remissions in childhood leukemia, and more notably of actinomycin-D in inducing remissions in advanced Wilms's tumor and increasing the cure rate when used as adjuvant to primary surgery and radiotherapy for Wilms's tumor, were important and germinal events in cancer therapeutics. Support from the Variety Club of Boston and from other sources enabled Dr. Farber to establish the Children's Cancer Research Foundation, or the Jimmy Fund, by which name it has been affectionately known, and to move his research undertaking from his one room tumor therapy clinic into larger quarters, once the Jimmy Fund building was opened in 1951. To the original four floors were added another four in 1958. Early investigative work on leukemia and childhood cancer took place in the Jimmy Fund, and Sidney Farber started to create the reputation of chemotherapy.

Eight years ago, when both chemotherapy and multimodality treatment of childhood cancer were making good progress, there was optimism that the child would indeed prove to be father to the man. The trustees of the Foundation, stimulated by Dr. Farber and a seed gift from the Dana Foundation, decided to enlarge the basic cancer research programs of the institution as well as to extend the successful and sophisticated clinical results with children to the much larger numbers of adult patients with cancer. This was accomplished with the construction of the eighteen floor Dana building, half of which has been completed and occupied since August 1975, and the remainder of which will be completed and occupied within the next fifteen months. In view of the expanded scope of the programs and in honor of the founder and long-term director, the name was formally changed to the Sidney Farber Cancer Institute in 1974, which is comprised of the Charles A. Dana Cancer Center, the Jimmy Fund building and the Michael Redstone Laboratories, used for animal research.

The Dana Center adds to the status of the Sidney Farber Cancer Institute as a complete clinical cancer center. With a four-fold increase in the amount of working space, a number of functions have been transferred from the Jimmy Fund building, such as the outpatient clinic, which can now be found on the street floor level — with separate areas for adults and children — and the adjacent hematology laboratory. The outpatient clinic now sees 100-140 patients a day, which is twice the number that could formerly be accommodated. The Jimmy Fund building remains an integral part of the Farber Institute and its research labs will be concerned with further experiments and studies. In the not too distant future it is hoped that some renovation also can take place there. Bulky instrumentation — such as the brain CAT scanner, which serves the patient population of the Peter Bent Brigham, Beth Israel, Children's, as well as the Sidney Farber and is now crowded into a corner of the building — will shortly be moved to the Dana Center.

In the nature of the original conception of the Dana Center, a total of 100 hospital beds was allocated. Only one of the

three floors, with twenty-six beds, is being utilized for patients at present. Six floors in the new building will house laboratories for basic science research. The Dana building will be able to absorb some of the overload of hospitals ultimately connected to the work of the Farber Institute thus furthering the cause of streamlined functioning. One example of this is oncologic nuclear medicine, which is run by Dr. William Kaplan who was able to shift his staff over to the Dana building from the Peter Bent Brigham. The magnitude of the entire staff, which has tripled in a matter of four years, is another indication of change brought about by this new construction.

In 1971 a cancer committee was appointed by President Bok, consisting of representatives from the Harvard Medical School and the Longwood hospitals, to make recommendations concerning the relationship of the proposed cancer institute to the Medical School, the University, and the surrounding hospitals. The major conclusions in the memorandum of understanding generated by the committee were: 1) that all professional appointments at the cancer institute be made through and by the Harvard appointment process; 2) that a permanent interhospital oncology committee be established to review and approve all substantive activities and programs relating to cancer that might affect or involve more than one of the institutions; and 3) that the physician in chief of the cancer institute be made permanent chairman of that committee.

So much for history. The rapid development of the Sidney Farber Cancer Institute in the last three or four years is outlined below.

Why a cancer institute? Historically, save for relatively few scientists and centers, cancer has been a part of everything else. For example, cancer chemotherapy is a subset of pharmacology; tumor immunology is derivative of and a subset of immunology generally; tumor virology is a subset of microbiology; and medical oncology falls under medicine. There is a substantial body of opinion that the organizational structure of academic institutions should continue as above. The author shares that opinion, but only in part. Some aspects of cancer re-

Dr. Frei's air of calm belies his full schedule — seeing patients, consulting on various research projects, and dealing with administrative matters.

It is only a few minutes walk from the quadrangle to the other end of Shattuck Street and the Sidney Farber Cancer Institute. A glassed-in passageway connects the Dana building, center, with the Jimmy Fund building, to the left.

search have not been fostered and have not prospered particularly well in classical academic institutions.

A strong argument can be made to the effect that medical oncology in the past ten to fifteen years made rapid progress in areas where it was taken out of the mainstream of American medicine, for instance the National Cancer Institute and the Sloan-Kettering Institute. It is only in recent years, despite the great clinical importance of medical oncology, that such divisions are being created and given appropriate resources in major medical schools, and that the subspecialty of medical oncology is being recognized by bodies such as the American Board of Internal Medicine. Still there are pockets of resistance in the medical school framework. For example, most departments of pharmacology have little or no interest in cancer chemotherapy and consequently, necessary programs do not exist. The above are essentially negative justifications for a cancer institute and they have, fortunately, become less important in recent years.

On the positive side is the rapidly emerging multidisciplinary integration of clinical oncology and tumor biology and the recognition on the part of those with particular special interests that the organizational integration of such programs deserves emphasis. The commonality of interests at a conceptual and operational level of tumor immunologists, virologists and membranologists is rapdily increasing to the point where the scientific interaction between the tumor virologist and immunologist, for example, might be greater than that between a tumor immunologist and someone interested in the immunology of arthritis or a tumor virologist and someone working in other areas of microbiology.

The same is true of the more clinically oriented cancer disciplines. The interdependence of the medical oncologist, surgeon, radiotherapist, and other clinical personnel in the evaluation and treatment of cancer is becoming more commonplace and, in the main, the direction is towards a multidisciplinary approach. Clearly, this requires a coordinated team of specialists. For example, some of the major progress that has been achieved in the multimodality management of osteogenic sarcoma and breast cancer was made possible by the close working relationship between pediatric oncologists, chemotherapist-pharmacologists, orthopedic surgeons, and clinical investigators skilled in supportive care. The major advances in basic tumor biology and the increasing sophistication of clinical investigation in cancer is leading to an increasingly beneficial relationship in some areas of cancer research between basic and applied investigators, and this too will undoubtedly become more prevalent. In short, the fundamental rationale for a cancer institute is the growing commonality of interest and purpose of previously disparate disciplines in tumor biology and clinical oncology. Given the necessary resources, support, and some degree of autonomy, we should be able to make important progress on a major health problem, namely cancer.

Another basis for consolidating diverse talents under an institutional umbrella relates to "division of labor" problems. For the clinical or basic science investigator, the opportunity to work exclusively in the area of tumor biology is essential. In many medical academic settings, the pressure to remain highly informed in all areas of internal medicine, surgery, microbiology, and so on, the complex administration and the necessary committees can very substantially blunt the focus and concentration necessary to "move the field."

Cancer medicine demands a great deal of general medical knowledge and resources. Patients with cancer have metabolic, cardiovascular, infectious, hematologic, and other problems that require subspecialty expertise. To this extent, the Farber Institute has the best of all possible worlds. On the one hand, we have sufficient autonomy to direct ourselves fully to the cancer problem, and on the other hand, we have sufficient contact with the Longwood hospitals and Harvard Medical School so that for the complications of cancer and its treatment we have access to nearby patient care resources and clinical research for consultation, direct interaction, and collaborative investigative approaches. Similarly, tumor immunology and a number of the other basic sciences form an integral part of the Farber Institute, while still participating in the more broadly based programs in their own fields.

Within the the above historical and philosophical framework, the Farber Institute has developed at a remarkable rate over the past four years. At the present time, major programs have been initiated and staff appointments made in three key areas: medical oncology, pediatric oncology and basic science. I will not attempt to delineate all of these programs. I thought it might be better to give two examples.

There is increasing evidence that a number of subpopulations of lymphocytes can be best discriminated by surface antigen properties and clearly have different and interrelated functions. These have important implications for tumor etiology, pathogenesis and treatment. Recently, such technology has been applied at the Farber Institute to tumors of lymphocytes, that is, to acute lymphatic leukemia in children. Using clinical investigative immunologic, membranologic and macromolecular chemical techniques, Drs. Stephen Sallan, Stuart Schlossman, Jack Strominger and their associates have determined that, in fact, acute lymphatic leukemia is a heterogenous disease in terms of the lymphocyte subpopulation that is rendered neoplastic. One such population, the so-called T-cell leukemia, has been found to have a different natural history and to react quite differently to chemotherapy. These observations are crucial to both basic and clinical research. In the latter area, they offer approaches to defining the disease in pathogenetic rather than morphologic terms, in detecting minimal residual disease, and in providing new approaches to treatment involving chemotherapy and immunotherapy.

A second example relates to osteogenic sarcoma. Newly conceived chemotherapeutic programs, effective in advanced disease, have been used by Dr. Norman Jaffe and his associates, immediately following surgery for the primary cancer, at a time when approximately eighty per cent of patients have microscopic metastases that will grow and become clinically evident in the median of six months, and result in death a few months later. Such chemotherapy (after substantial developmental work involving clinical investigation, pharmacologic and toxicologic monitoring) has increased the propor-

The hematology laboratory on the main floor of the Dana Center serves both the adult and pediatric outpatient clinics on either side of it.

"The fundamental rationale for a cancer institute
is the growing commonality
of interest and purpose of previously disparate disciplines
in tumor biology and clinical oncology."

Diagnostic radiology is located in the basement of the Dana Center, along with laboratories for platelets, microbiology, chemistry, pathology and the tumor registry.

tion of long-term survivors from twenty to sixty per cent. Moreover, it has given us methods for treating the primary tumor, so that the extremity can be preserved by initial cytoreductive chemotherapy, segmental bone resection and endoprosthesis.

The Farber Institute enjoys an important, productive, and close administrative, clinical, and academic relationship with the Medical School and the "Boston oncology five."

Perhaps the most important reason for this has been that we have made an effort to initiate programs in tumor biology and clinical oncology which are either unique or supplementary to ongoing programs in the above institutions.

Teaching. Interns and residents from the Peter Bent Brigham and Beth Israel hospitals rotate on a formal basis for training in oncology. We have a number of medical students involved in clinical and laboratory research programs. An outstanding group of medical and pediatric oncology trainees (fellows) hold appointments primarily at the Farber Institute, and interrelate importantly with Children's, the Peter Bent Brigham, and other Longwood area hospitals. We are involved in Harvard continuing education programs, and pre- and postdoctoral training programs. Essentially all of our staff participate to varying degrees in teaching programs at the Medical School.

Radiotherapy. The director of the Joint Center for Radiation Therapy, Dr. Samuel Hellman, is chief of the division of radiotherapy at the Farber Institute and a member of our steering committee. Major space has been allocated within the Dana Center for his program for radiobiological research and we plan to develop a radiotherapy unit here, which will be under the direct supervision of Dr. Robert Goodman; currently, a limited amount of radiotherapy is done. Both Dr. Hellman and I believe that there is evolving a new generation of radiotherapy. A strip nucleus machine that will have a more beneficial effect against tumors may eventually be installed in the Dana Center, which will be operated by the Joint Center staff, but nothing has been formulated yet in this regard. There is a radiotherapist on call at the various member hospitals of the Joint Center with whom we can consult before making a decision about treatment. Through multidisciplinary treatment facilities and our association as a member hospital of the Joint Center for Radiation Therapy, we achieve greater collaboration and progress.

Surgery. Surgery is a major component of cancer treatment. Surgical oncology as it relates to the Farber Institute presented some difficulty initially, but in the last two years has been more successful. We do not perform surgery at the Farber Institute. Patients who are first seen or treated at our facility will be admitted to the Peter Bent Brigham for a surgical procedure. Children requiring surgery are admitted to Children's Hospital. Such patients are often transferred back to the Dana Center, where our specially trained staff can provide for their care. Each of the five Longwood hospitals has designated a surgical oncologist to serve as a liaison when patients first seen at any one of these hospitals are then referred to the Farber Institute.

Cancer Control. The National Cancer Institute has been charged with a cancer control program designed to increase the quality of patient care services in the various regions by providing organizational, educational and other resources. Certain institutions, designated comprehensive cancer centers, have been charged with serving as a focal point for the development of such programs. The Sidney Farber Cancer Institute has been so charged for the northern New England region. We are acutely aware of the special status this confers on our institution. The complexities of health care delivery particularly in regard to cancer, with multidisciplinary methods becoming increasingly necessary, make cancer control both an enormously difficult and an extremely vital challenge.

Dr. Alfred Frechette, who is in charge of this program started some three years ago, invited the heads of the major cancer programs in the Boston area (at the Massachusetts General Hospital, Boston University Medical Center, Tufts-New England Medical Center and the American Cancer Society) for discussions, and formed an executive committee for cancer control composed of representatives of these institutions. The identity of the Farber Institute has been subsumed by the title Cancer Control Program of Northern New England; Dr. Frechette chairs the executive committee, which has been enlarged when appropriate — the most recent member being the medical school at the University of Massachusetts at Worcester. Cancer information programs for lay persons and physicians in the northern New England area have been developed. "Cancer care systems" have been organized in Springfield and Bangor, and are in the planning stages for other population clusters in northern New England.

Basically, the purpose is to upgrade, particularly in an organization sense, the delivery of services in population centers, so that an increasing proportion of patients can be treated definitively by a network of community physicians and hospitals. Through an informational exchange, they can be apprised of when new and improved cancer care services have become available at one of the large urban centers; and thus be in a better position to refer patients or to have their treatment periodically evaluated. Encouraging, too, has been the preparation of a grant application which shows a unified effort on the part of the institutions represented on the executive committee. In addition, the further evaluation of new treatment programs on a broader base in New England is occurring both in the multidisciplinary treatment centers and in hospitals of smaller communities. Equally or perhaps more important is that through the cancer control program, epidemiologic studies, the identification of high-risk populations, and a more rational application of cancer detection techniques have emerged.

Not too many years ago, cancer research tended to be isolated and limited to a few visionaries. Now, because of their efforts and with the convergence of a number of scientific disciplines, there is a greater likelihood of formulating important and primary hypotheses and the methodological tools to test them exist or can be created. In pursuit of our ultimate goal, the successful prevention and treatment of cancer, the Farber Institute has and continues to delve into studies of the most fundamental of biological problems, into drug development and pharmacology, into clinical investigation, and into the continual application of this knowledge.

A model of cooperation: The Joint Center for Radiation Therapy

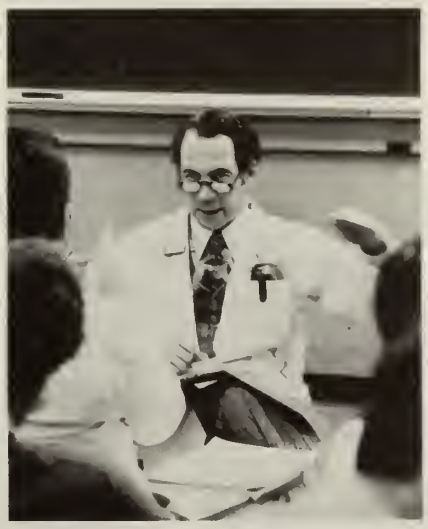
by Samuel Hellman

Samuel Hellman, M. D. has been director of the Joint Center for Radiation Therapy since its inception in 1968. He joined the HMS faculty in that year as associate professor in the department of radiology; in 1970 he became a professor in the department of radiation therapy, and since 1971 has held the Alvan T. and Viola D. Fuller American Cancer Society Professorship of Radiation Therapy.

Of his interest in radiation therapy, Dr. Hellman says: "The physician's goal should always be to restore the patient to his former health as completely as possible. I like radiation therapy because it offers the possibility of curing a tumor with little, if any, cosmetic or functional deficit." He does not, of course, see this mode of treatment as a panacea. "We must get out of this business of chauvinism about one's specialty, and think how we can best use surgery, radiation therapy, and chemotherapy together to optimize the treatment of the patient."

Dr. Hellman's day begins with the 8 o'clock meeting he conducts every morning for all Joint Center radiation therapists and residents, at which cases of special interest or difficulty are discussed. He then spends several hours seeing patients, both his own and problem cases at any of the Joint Center's member hospitals. (Since becoming director of the Center, Dr. Hellman has been rotating his "home base" hospital every few years; he is currently based at the New England Deaconess Hospital.) He may then put on the hat of administrator again and attend to duties in his office at the Joint Center's administrative headquarters in the Shields Warren Radiation Laboratories. During the remaining afternoon hours, he can often be found in the large research laboratory he directs there, which is devoted to investigating his special interest: the response of normal tissues to radiation, and how best to preserve them during radiation therapy. Dr. Hellman estimates that his time is divided about equally among administration, patient care, and research.

Before coming to HMS, Dr. Hellman studied radiotherapy and pursued cancer research at Yale University School of Medicine and at the Royal Marsden Hospital and Institute of Cancer Research in London, and was an assistant professor of radiology at Yale.



Dr. Hellman leads the Joint Center's weekly chart rounds, at which radiation therapists and residents discuss the treatment planned for patients whose cases present unusual characteristics or difficulties.

What are the objectives of a cancer center? Obviously, the patient should be availed of that management most likely to achieve cure, long-term control, or palliation of the disease. Such care must be available to all patients within the center's compass, regardless of referral source and regardless of ability to pay. There must be effective use of skilled, highly trained personnel, sophisticated equipment and facilities. Active educational programs for medical students, postdoctoral fellows and residents must be fostered to educate the professional community and to expand personnel resources. Finally, the activities of the center should be compatible with both clinical and basic research: maximum information must be derived from all patients, and research advances must be translated rapidly into their clinical applications. The following will describe our attempt to meet these goals as a radiation therapy center in the multihospital Harvard Medical School setting.

The Joint Center for Radiation Therapy is not a "center" in the physical sense, but rather a pooling of resources — human and technological — among several member institutions. Its organization began in the mid-'60s with the efforts of Dr. Herbert L. Abrams, then the new chief of radiology at the Peter Bent Brigham Hospital; Dr. Sidney Lee, who was the director of the Beth Israel Hospital; Mr. R. D. Lowry, director of the New England Deaconess Hospital; Dr. John G. Freymann, director of the Boston Hospital for Women, and Mr. Gerald Mungerson, its associate director. At their urging, the faculty of medicine agreed to appoint a tenured faculty member who would coordinate and integrate radiation therapy activities at Harvard affiliated hospitals in the Longwood Quadrangle area.

"The Joint Center for Radiation Therapy is not a 'center' in the physical sense, but rather a pooling of resources — human and technological — among several member institutions."

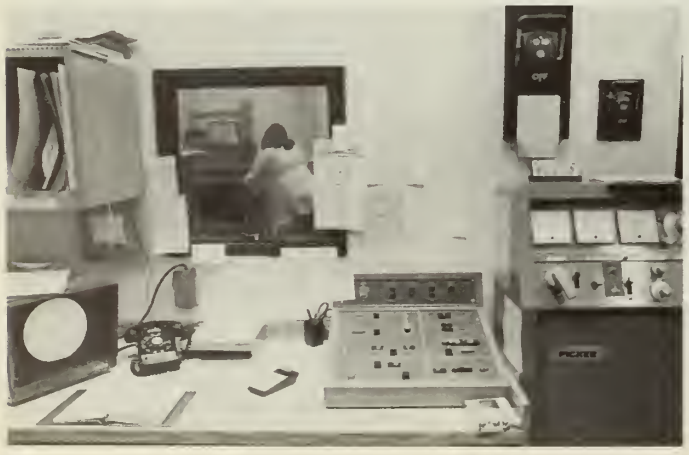
The original members of the Joint Center for Radiation Therapy were four: the Beth Israel, Peter Bent Brigham and New England Deaconess hospitals, and the Boston Hospital for Women. Since that time, the member hospitals have been expanded to include the Children's Hospital Medical Center and the Sidney Farber Cancer Institute. The Faulkner Hospital in Jamaica Plain has associate member status.

The purpose of the Joint Center is to provide sophisticated and comprehensive radiation oncology at its member hospitals, as an integral part of the management of patients with neoplastic disease. Under a coordinated program in radiation oncology, patients receive a plan of treatment that draws upon whatever personnel and facilities available at the member hospitals are most suitable for each stage of their care. Thus, patients have access to the radiation oncology resources of all of the member hospitals and unnecessary duplication of personnel or facilities is avoided. The Center has uniform treatment policies, a common approach to management problems, common physics and technical staff, one system of records, a common data bank, and a single tumor registry.

The Joint Center's organizational structure is unique. At each of the hospitals, there is a department of radiation oncology, which is at the same time a division of the Joint Center for Radiation Therapy. All staff members have privileges within all of the hospitals. The junior staff, residents and technicians rotate through the different units, thereby fostering uniformity of treatment, philosophy, and technique. The senior staff members have a primary base of operation, allowing them to identify with a particular hospital staff. Identifying each division of the Joint Center with a permanent senior staff member, who is the head of radiation therapy at that hospital, promotes acceptance within the hospital of the entire radiation oncology team. These six key positions are held by Dr. Martin Levene (who is also deputy director of the Joint Center) at the Beth Israel Hospital, Dr. John Chaffey at the Peter Bent Brigham, Dr. Abraham Marck at the Boston Hospital for Women, Dr. Anthony J. Piro at the New England Deaconess Hospital, Dr. J. Robert Cassady '63 at the Children's Hospital Medical Center, and Dr. Robert L. Goodman at the Sidney Farber Cancer Institute. In addition to these department heads, there are four (soon to be increased to six) other radiation oncologists distributed among the member hospitals.

Each division of radiation oncology actively participates in the multidisciplinary conferences, rounds, and all other functions of the hospital in which it resides. These close working relationships with other physicians foster active participation by the radiation oncologist

Treatment Planning Center



Installed five years ago in an attractively remodeled former hospital laundry, the Treatment Planning Center makes it possible to take measurements and compute and rehearse each patient's treatment plan without taking up the valuable time of actual radiation therapy machines. Flanked by examination rooms, space for computer equipment, and a workshop for custom-making devices for use in therapy, the heart of the planning center is the therapy simulation unit (far right), with an adjoining room (left and right) from which the equipment can be controlled and monitored, and the patient observed.

At left, staff (seen through window) are positioning a patient on the therapy simulator. The observation room contains (l to r) a circular television screen on which continuous fluoroscopic x-rays of the patient appear as they are taken, a remote control console for the movement of both the machine and the couch on which the patient rests, and an x-ray control unit. At right, x-ray measurements of the patient are being taken. On the basis of these, a treatment plan can be formulated within a few minutes, using computers nearby — a process that once took several hours.

in initial management decisions — often the most important therapeutic maneuver. If we are to provide optimal care for patients, decisions with regard to therapeutic modalities must be multidisciplinary, combining the knowledge and skills of all cancer-related areas.

In order to integrate and coordinate the operations of the Center, all of its professional staff members meet at least once a day in formal conference. Patient management problems are presented so that expert consultation can be given, and general treatment protocols are evolved in the same fashion as they would if the Center had all of its facilities in one location.

All of the cooperating hospitals have a formal area designated as the radiation oncology department administered by the Joint Center for Radiation Therapy. These contain, at the least, the physicians' offices and secretarial support, palliative therapy devices, examining rooms and follow-up facilities. In some, this includes major supervoltage radiation therapy devices, machine and electronics shops, a radiation therapy simulator, computers, and other equipment. The larger radiation therapy machines are housed at the Beth Israel, New England Deaconess, and Peter Bent Brigham hospitals, with smaller facilities at the Boston Hospital for Women's Parkway Division and at the Children's Hospital Medical Center. Facilities are used to complement each other, and an effort is made to distribute physical facilities in a fashion most appropriate for the individual hospitals.

An important example of the sharing of expensive physical resources is the Treatment Planning Center — located at the Parkway Division of the Boston Hospital for Women — which was opened in 1972. A majority of patients go to the planning center at least once. Body contours are recorded, the treatment plan is computed, the treatment technique is rehearsed on the radiation therapy simulator, and beam modifying and immobilizing devices are custom-made for each patient. Upon completion, the plans and devices are forwarded to the hospitals best suited for that patient's treatment.

Other examples of specialized shared equipment include the electronics shop at the Beth Israel Hospital and the 12 MEV (million electron volts) linear accelerator at the Peter Bent Brigham Hospital which is available to all patients whose treatment involves the use of high-energy electrons. Newly opened is the "dynamic treatment" radiation therapy facility at the New England Deaconess Hospital *(see p. 33)*. Shortly to be available at the Sidney Farber Cancer Institute will be additional and badly needed simulator and treatment planning capabilities.

In the eight years of its existence, the Joint Center for Radiation Therapy has become the largest radiation therapy center in New England. It now treats 2100 new patients a year; the great majority of these are ambulatory. Most patients are referred by staff of the member hospitals, about a third come from outside sources, and a small number are self-referred. No patient is denied treatment because of inability to pay, and no distinction is made between "private" and other patients.

When a new patient is referred to the Joint Center, he or she is assigned a radiation therapist who assumes the major responsibility for treatment and becomes, in effect, the patient's primary care physician during the course of therapy at the Center, regardless of where treatment takes place. After examination by the radiation therapist and a resident physician, a diagnosis and treatment strategy are formulated, and are discussed with the referring physician. If they and the patient agree that radiation therapy is to be a part of treatment, the next step is a visit to the Treatment Planning Center, where a radiological physicist helps to design a treatment program. Patients are assigned to whatever facilities are most appropriate for each portion of their treatment; however, in about seventy per cent of the cases it is possible to arrange for their therapy at the referring hospital. Therapy usually takes from four to seven weeks, with a short visit to the facility four or five days a week. During this time, the patient is seen daily by a radiation therapy technologist, and at least weekly by the radiation therapist. A variant of this pattern is the ten per cent of patients who receive internal therapy: the implantation of encapsulated radioactive isotopes in or near the tumor. This procedure is usually done only once or twice, and may be used as either an alternative or an adjunct to radiation therapy.

"We must get out of this business of chauvinism about one's specialty and think how we can best use surgery, radiation therapy, and chemotherapy together to optimize the treatment of the patient."

The patient care team thus consists of a radiation therapist, a resident in radiation therapy, a radiological physicist, and a radiation therapy technologist. The Joint Center's staff of 125 includes ten radiation therapists, five professional physicists and seven biologists all at the doctoral level. The therapy technologists number seventeen. Postgraduate educational programs currently involve eleven candidates for advanced degrees in radiological physics in a collaborative graduate program with the Harvard School of Public Health, and twelve residents in radiation therapy. Harvard Medical School student participation in clinical activities and research laboratories has been encouraged.

Clinical research is a major activity of the Joint Center for Radiation Therapy. This is exemplified by the studies in breast cancer and lymphoma. The treatment of carcinoma of the breast primarily with radiation therapy and without mastectomy has long been an interest of the Joint Center. The results are quite gratifying, indicating remarkably good local control while at the same time maintaining the breast and underlying muscle with little if any radiation changes. These data combined with the encouraging results using adjuvant chemotherapy offer the promise that breast cancer may be successfully treated locally following excisional biopsy by radiation therapy with chemotherapy subsequently delivered to destroy sub-clinical distant disease. Such treatment may result in cure without functional or cosmetic impairment.

Excellent results have been obtained in early stage Hodgkin's disease in both children and adults treated with radiation therapy alone. Treatment of more advanced Hodgkin's disease has also been improved using combined chemotherapy and radiation therapy in judicious schedules. The treatment of non-Hodgkin's lymphoma with total body radiation has been found to have little morbidity and is the most effective treatment thus far for one generalized form of this disease. Current research is concerned with appropriate methods of combining this with chemotherapy.

A multi-faceted laboratory research program is being conducted under the Joint Center's director of biological laboratories, Dr. James A. Belli. Currently housed primarily in the Shields Warren Radiation Laboratories of the New England Deaconess Hospital, these activities will be expanded into laboratory space provided in the Dana Center of the Sidney Farber Cancer Institute. Using cells in culture, the interactions of chemotherapy and radiation are being investigated in order to elucidate the mechanisms by which these agents, alone and in combination, can cause cell death. These studies have important clinical implications since, ever increasingly, drugs and x-ray are used in combination. New observations have indicated that actinomycin and adriamycin impair the ability of the cells to repair radiation damage. The mechanism of drug resistance and the clinical implications that may result are a focus of this work.

Hyperthermia is being investigated as a possible therapeutic tool since this greatly enhances the effect of radiation and also modifies the repair of radiation damage. DNA repair, its mechanism, and the effect of these same chemical and physical manipulations is being studied in a number of the laboratories.

A new project has been started, concerned with interaction of hormones and radiation or cytotoxic drugs on hormonally dependent tumors. This latter may have great clinical implications in the treatment of prostatic and breast cancer.

Research on the use of internally emitting radionuclides in the treatment of human tumors presents the opportunity for a new method of localizing radiation. In this project a ^{125} IUDR replaces thymidine in DNA. This agent causes tumor destruction at extraordinarily low concentrations. The mechanism of action and tumor states in which it is most efficacious are currently being investigated. Using tumor directed antibodies as carriers for such radionuclides may also offer the possibility of specificity resulting in tumor destruction with little normal tissue damage. Tumor physiology is another area of active investigation including the study of the surface characteristics of tumor cells in an attempt to understand how these are related to their biologic activities of local growth and metastasis.

Detailed study of normal cell renewal systems is necessary since it is the tolerance of these vital tissues which can limit the amount of x-ray or chemotherapy that can be administered. Study of the stem cell compartment of the hematopoietic tissues has been concerned with how cytotoxic agents can cause cell death, stimulate proliferation and alter differentiation directions. Recent studies indicate that alkylating agents can prematurely "age" stem cells by limiting their proliferation capacity. If this is the case in humans, it may have profound implications for adjuvant chemotherapy. These investigations are being expanded to other

Therapy in motion

A unique dynamic treatment linear accelerator unit, developed by a Harvard-MIT team of scientists, was dedicated on December 1, 1976 at the New England Deaconess Hospital. It will be available to patients at all six member hospitals of the Joint Center for Radiation Therapy.

Dynamic therapy is based on the same principle as all radiation therapy — minimizing the amount of radiation passing through healthy tissue, while maximizing the radiation reaching the tumor — but newly developed technology makes it possible to manipulate components of the therapy situation so as to achieve this objective more fully. During therapy on the new equipment, a computer controls the intensity of the beam, as well as the movements of the table on which the patient rests, which can move up, down, and sideways; and of the radiation-generating machine itself, which can revolve continuously around the patient. The highly concentrated radiation thus reaches the malignancy at all times, but its path through the body is constantly altered. The result is a method which should be much safer than conventional radiotherapy for the treatment of deep seated growths, such as abdominal tumors and lymph node cancers.

Of the 200,000 Americans who die of cancer each year, Dr. Hellman explains, the group for whom dynamic therapy may hold out new hope is the 65,000 whose deaths are caused by localized tumors (rather than by cancer metastasizing throughout the body). The hypothesis is that the higher dosages made possible by this new technology will be enough to kill tumors that could not be given that amount of radiation on conventional machines, because of the risk to healthy tissue.

The new unit is expected to provide treatment for forty patients a day during regular daytime hours. The computerized system has been tested on models of the human body; however, a year of further testing and refinement is necessary before the equipment will be operational for dynamic therapy. In the meantime, it will be utilized in conventional radiotherapy.

The installation of the new equipment is the culmination of cooperative efforts among several institutions and among professionals in many fields. Funds for the apparatus itself came from the Deaconess Hospital, while research and development were financed by the National Cancer Institute through the Harvard-MIT Program in Health Sciences and Technology. Engineers, physicists, computer scientists, and physicians from the two institutions collaborated in developing the dynamic therapy system. Dr. Martin Levene, deputy director of the Joint Center, is the principal investigator under the NCI grant; professor Henry N. Paynter of MIT's mechanical engineering department is co-principal investigator, and Irving A. Berstein of MIT is executive officer of this joint research effort.

Others who have been involved in design of the unit are the Joint Center's director of physics, Dr. Bengt Bjarngard, an associate professor at HMS and at the Harvard School of Public Health, who was the project's director of physics and engineering; physicist Dr. Peter K. Kijewski, assistant professor of radiation therapy at HMS and at the JCRT, who is a principal investigator in the development of a computer controlled radiation system; and professor Richard S. Sidell, associate professor of mechanical engineering at MIT, who served as consultant in perfecting the mechanical engineering component of the project. The Harvard-MIT Program in Health Sciences and Technology is directed by Dr. Irving M. London '43A, professor of medicine at HMS and MIT; Dr. Anthony Piro, associate professor of radiation therapy at HMS, is director of the radiation center at the Deaconess Hospital where the dynamic therapy will be carried out. The equipment was manufactured and installed with the cooperation of the Siemens Corporation.

This 12 MeV linear accelerator (left), one of two radiation therapy machines located at the Peter Bent Brigham Hospital, is available to all Joint Center patients whose treatment involves the use of high-energy electrons. Radiation therapy technologists in the adjoining room control the dosage by computer and observe the patient on a television monitor.

normal tissues including the gastrointestinal mucosa and the immune system.

A special committee, which meets weekly, has been charged with the responsibility of determining when the results of laboratory research have reached a stage where they can be safely and beneficially applied in a clinical setting.

The research activities in the division of physics and engineering, under the direction of Dr. Bengt Bjarngard, have been intensified by the funding of a research program in "dose optimization" organized under the Harvard-MIT Program in Health Sciences and Technology. One of the major efforts of this program is to improve the distribution of the radiation dose by controlling all possible machine motions and dose rate of the linear accelerator with a computer, all while the patient is being irradiated. Considerably more complex treatment can be administered safely in this manner (*see p. 33*).

A vital concern of the physics and engineering division is determination of the actual dose that reaches every part of the body exposed to radiation. To this end, several projects have been developed. 1) Calculations of dose distributions in radiation therapy require precise knowledge of the densities of different tissues in individual patients. A refined instrument for measurement of these densities is being designed. 2) The dosimetric considerations of the treatment of breast cancer allow accurate prediction of the dose to skin and subcutaneous tissues. These have been measured and the contributory factors elucidated, making possible improved techniques and equipment, particularly in the use of electrons, for which the physics group has contributed a major innovation in beam design. 3) In order to study dose distribution as well as other problems in clinical physics, a new dose measurement technique has been developed, making use of the phosphorescence after irradiation of certain materials incorporated in Teflon. The technique allows high spatial resolution. Recent developments include the transfer of the phosphorescent light to photographic film for quantitative evaluation.

Patient care, education, and a multifaceted research program continue to be the major activities of the Joint Center for Radiation Therapy. The major theme throughout all these activities is the development and application of techniques that will maximize the damage to tumors while minimizing the damage to normal tissues. This requires research and development in physical methods, biologic understanding, and the judicious use of combinations of radiation and chemicals. These activities must be studied in the laboratory but successful techniques reach full realization only when they can be applied to benefit our patients.

The goals of the Joint Center for Radiation Therapy are to provide the patient with the treatment most likely to achieve cure, long-term control or palliation of disease. These treatments will change as new knowledge is gained. The Joint Center for Radiation Therapy can help achieve this goal by making a broad base of professional consultation along with diverse and sophisticated equipment and techniques available to the patient. Research and training are fostered in such a milieu. An additional important advantage to be accrued from such a radiation oncology organization is its impact on the other areas of cancer management. It has provided the model for similar organizations in medical oncology, surgery, and other specialties; thus, providing true inter- and intradisciplinary coordinated cancer management within the general hospitals, currently the focus of our health care system. Multidisciplinary participation is important at all levels of management from the initial management decision to rehabilitation and follow-up. Such cooperative interhospital arrangements seem most conducive to providing comprehensive care in the setting of the general hospital while at the same time husbanding resources by optimally using highly-skilled personnel and expensive, sophisticated equipment.

Book Review

A sketch of Lawrence made in 1919 by Augustus John.

The psychobiography of a legend

A Prince of Our Disorder. John Mack, M.D. Little Brown, Boston, 1976. 562 pages, $15.00.

"Show me a hero and I will write you a tragedy." – F. Scott Fitzgerald

Over the last twenty years perhaps no region has been more frequently in the news nor its political instability of more constant concern than the Near East. Few people now remember that at the end of World War I, when the Allies wrested the area from the Turks, there was a brief period of peace and unity and it seemed possible to hope that this unity might endure. Its architect was T. E. Lawrence and, popularized and mythologized by Lowell Thomas and others, he was acclaimed as the preeminent hero of the day.

A few years passed; expectations of regional stability were disappointed; Lawrence sought obscurity in the ranks of the RAF and the Royal Tank Corps and anonymity by frequently changing his name. But curiosity and admiration followed him — so often his very attempts at seclusion seemed to make the limelight brighter — and when he was killed in 1935 (accident or suicide or a combination of both), the myth only grew and books by worshippers were followed by many from detractors, each one trying to understand and explain Lawrence, his motives and his deeds in order to extoll him or to diminish him.

Was he a hero or a fraud? Had his seemingly astonishing accomplishments taken place in fact or had he fabricated them in his *Seven Pillars of Wisdom*? Was he the great and original leader of the Arab Revolt or merely a minor writer of overblown style who succeeded by a torrent of ambiguities in a masterly plot of self-exaltation? He was all of this and more: a complex, tormented figure, worshipped by those who fought or worked with him; loved by friends high and low, even when they were puzzled or exasperated by his theatrical effacements; and enormously admired by millions searching for a hero, until much later the naysayers and literary scavengers pounced on his reputation, trying to tear apart his fame by exposing the flaws and contradictions of his life's story. In our own time André Malraux most nearly resembled him, blurred in background; the brilliantly intellectual writer who was also a man of action; defender of the oppressed; fighter in romantic causes and creator of his own legend. It is no coincidence that Malraux should have started a book on Lawrence and never finished. Typically, he equivocated about their actual acquaintance, leaving it uncertain whether they had ever met or, in fact, had known each other well.

A scholarly, well-balanced biography of Lawrence has been badly needed and John Mack '55, professor of psychiatry at Harvard Medical School, has masterfully filled this need with his recently published book, *A Prince of Our Disorder* (Little Brown, 1976). Many years of travel and research have gone into this biographical venture, including interviews with surviving relatives and friends, with access to many original letters and documents never before tapped or analyzed. The conventional military hero of the Arab Revolt is dealt with rather briefly, but Lawrence's family background and childhood are reviewed minutely, to find the sources of his later exploits and of his internal conflicts, his agonies and his quirks. The personalities of his parents are scrutinized, as well as his friends, his relations, his medieval and romantic interests and his readings, for, as A.E. wrote:

In ancient shadows and twilights
Where childhood had strayed,
The world's great sorrows were born
And its heroes were made.

Very much in evidence in this biography is the family constellation: the gentle, ineffectual, aristocratic father and particularly the steely mother, herself illegitimate, who having seduced her employer away from his family and having furtively had five sons out of wedlock, appeared to seek redemption for her sins through the deeds of these sons. Lawrence wrote of her: "She was wholly wrapped up in my father, whom she had carried away jealously from his former life and country, against great odds; and whom she kept as her trophy of power." And also: "I think I am afraid of letting her get ever so little inside the circle of my integrity: and she is always hammering and sapping to come in." "Whenever we came together, I always felt that she was laying siege to me, and would conquer if I left a chink unguarded." And yet he felt himself to be so similar to her, and he seemed to share the family guilt which might only be cleansed with great and glorious feats.

Dr. Mack in his elegant, erudite book, gives a balanced and most satisfying interpretation of the strengths and weak-

nesses and neurotic traits that made Lawrence both so much admired and so controversial. He has used felicitous phrases to describe Lawrence's historical role as the "enabler" and the "godfather" of the Arab cause. Referring to his own motives in writing this biography, he senses the same powers acting on him from the past: "I have found it easy, though at times disturbing, to identify with his hopes, his actions and his pains. He has enabled me, as he did so many others, to see possibilities that were not dreamed before."

There too lies the explanation for Lawrence's success in overcoming the centrifugal drives of various Arab tribes and individual leaders, allowing him to bring to them cohesion, however, briefly, and joint success against the Turks. At a more fundamental level I would have stressed, even more than the author does, the exquisite, feminine sensitivity that allowed Lawrence to perceive the insecurities and concerns, as well as the potential power, of every individual he dealt with. As Celandine Kennington so well paints it, when Lawrence visited her after she had had a miscarriage: "On and on he went, describing me to myself, clarifying all the nighmare fears by defining them, and doing it from the woman's point of view, not the man's . . . He seemed to know everything that miscarriage could mean . . . as he talked warmth began to come into me instead of flowing out of me, for besides putting things as they were, he brought a power to remake them all afresh."

The same sensitivity, when turned inward, was at the root of Lawrence's doubts and hesitations, his self-loathing and abasement. And it is perhaps also the reason why we find him so fascinating, because his introspection has allowed us in minutest detail to see the inner working of the hero. Dr. Mack quotes Irving Howe, who in his essay "T. E. Lawrence: The Problem of Heroism," writes: "What finally draws one to Lawrence, making him seem not merely an exceptional figure, but a representative man of our century, is his courage and vulnerability in bearing the burden of consciousness." Or, more simply, as one of his Bedouin friends said of him: "Of all the men I have ever met, he was the greatest Prince."

Guillermo C. Sanchez '49
Assistant Clinical Professor of Medicine

Letters

It's poetry to our ears

Thanks for your great work in assembling the poems in the last *Alumni Bulletin.* Page 20 inspired the following:

Regarding Dr. Henley,
Hear my picayunish fuss.
You said he was "tubercular."
Do you mean "tuberculous?"*

*Dorland, 25th Edition.
Tubercular — of, pertaining to or resembling tubercles or nodules.
Tuberculous — pertaining to or affected with tuberculosis.

Here's my: Advice to Endomorphs

Eschew the hardened fats, and make
Your appestat behave.
Ingestion of cholesterol
Will lead to an oily grave.

Eric R. Sanderson '37

I am overcome with admiration for the wisdom, taste, grace, and good judgment displayed in the collaboration with David McCord, the "Medical Muse" issue of HMAB. The selections were all arresting, some very moving, others witty — a compendium well worth keeping and quoting. In these technophilic times it is inordinately inspiring to see you turn the *Bulletin* to so enriching a purpose.

It occurs to me that there must be a latent pool of versifiers among our own alums — what about an issue of solicited light and heavy verse from HMS's graduates? They can't be spending *all* their time in the labs, can they? For openers, I append two samples of a verse fad that ephemerally swept the poetic skies: the Higgledy Piggledy:

I. On the Meteoric Rise of the Pharmacotherapies in Psychiatry

Higgledy Piggledy
Modern Psychiatrists
Often receive a
Perceptible wrench;

When they discover that —
Psychodynamically —
Freud's been supplanted by
Smith, Kline and French.

II. Absence Makes the Heart Grow Fonder*

Lubbedy — Dubbedy
Heart transplant surgery
Raises a specter for
Valentine's Day;

Now pining suitors can
(Anti-romantically)
Send a love token, still
Beating away.

* Previously printed in the *New England Journal of Medicine 278:* 628, 1968.

Thomas G. Gutheil '67

The November/December 1976 issue of the *Bulletin* was the best yet. You and David McCord did a marvelous job, including the biographical sketches regarding the poets that were almost as good as the poems themselves.

I am appending two personal contributions that are not in the same league, or really about medicine, but which may intrigue and amuse you.

Upon Reading of International Libido Failure at High Altitude*

I never want to ever miss
The sweet rewards of nuptial bliss,
So I will do my level best
To never climb Mt. Everest.

*Steel, P. Medicine on Mt. Everest, *Lancet* 2:38, July 3, 1971. "Discussion, thought and opportunity for expression of sex were remarkedly absent at altitude. People began to notice what they had been missing only below 12,000 feet on the way home."

Upon Reading of Salmonellosis Traced to a Pet Turtle* (With Apologies to Ogden Nash)

A turtle lives twixt plated decks
Which practically conceal its sex.

Nash thinks it clever of the turtle
In such a fix to be so fertile.

New hazard now for "pachymates"
Twixt "epi-decks" and "endo-plates,"

For pathogens have lately come
To threaten placid turtledom.

As salmonellae glumly glide
Beneath the reptiles' granite hide

And lurk in unaccustomed places
Under their cosy carapaces.

— *NEJM* 273: 494, 1965.

* Rosenstein, B. J., Russo, P., and Hinchliffe, M. C. Family outbreak of salmonella traced to pet turtle. *NEJM* 272: 960-961, 1965.

Joseph Stokes III '48

I had to write and tell you what a pleasure your poetry issue of the *Alumni Bulletin* has been to me. I especially like your "Orion" on the front cover. I feel the same way. I also enjoyed especially Benjamin Miller's "To Live in Eagerness at Sixty." The Emily Dickinson selections were new to me.

I finally got my private pilot's license in 1970 and have owned my own plane for almost two years. I decided my flying years were, of necessity, not many, and I wanted the plane available when I wanted to fly.

I have always tried my hand at verse and was surprised recently to find something written in high school about flight. Evidently it was in my mind long before I finally managed it. I am a firm believer that old age is what you make it and unless you try new challenges and strive for new horizons, the brain will atrophy.

Again, thank you for much enjoyment and new inspiration.

Mrs. Agnes Cattell
widow of Richard B. Cattell '25

We would like to make note of the fact that James Kirkup's truly remarkable poem, "A Correct Compassion," written in 1952, was dedicated to Mr Philip Allison, after watching him perform a mitral stenosis valvulotomy in the General Infirmary at Leeds. Mr Allison is an honorary fellow of the American College of Surgeons. — Ed.

Peaceful coexistence?

Recent *Bulletin* letters by some alumni about Harvard medical students have been unfair and highly intolerant. Current residents of Vanderbilt Hall, for example, have been likened to infectious agents.

Isn't it time to end the acrimony of the late 1960s and set aside divisive rhetoric? Or must we all continue to suffer the ravages of an uncontrolled autoimmune process?

John Levine '79

I read with interest Dr. Ingelfinger's account of his gallantry to his early (and present) female colleagues. His remarks are noteworthy not for their originality or timeliness, but for their appearance in the *Harvard Medical Alumni Bulletin.* Alumni and faculty who publicly attack students and colleagues on the basis of sex and race evidently care little for their school or for the possibility of its support by future graduates. Alumni publications and other journals which print such material do a disservice to Harvard Medical School.

Donna J. Krupkin '79

Invitations to elect primary care

William D. Cochran '52 writes [September/October 1976 *Bulletin*] that the Alumni Survey Committee found few good electives in "ambulatory care" for third and fourth year HMS students. He writes that "third and fourth year students still can only elect programs in ambulatory or community medicine that either are university hospital outpatient based — exposing them most often to rather esoteric diseases in a special setting — or they can 'develop their own' elective with local practicing MDs."

The name of the Central Maine Family Practice Residency Program describes its location and primary purpose. Five hospitals and their medical staffs contribute their efforts. H. Douglas Collins '52 is the director. As is true of all family practice residencies, we have a model practice where resident physicians care for their own ambulatory patients. In addition, we have elective opportunities for third and fourth year medical students. Many students have come from several different medical schools, but none from HMS — although we are a family practice elective in the Harvard Medical School catalog.

We would be pleased to describe this elective opportunity to any interested physician or student.

Alexander M. McPhedran '54

In response to Dr. William D. Cochran's letter in the September/October issue of the *Bulletin,* we would like to emphasize that "educational experiences" are available for both clinical and preclinical students at Harvard Medical School in sites other than those based in a university hospital outpatient department. Some of these are relatively new in the curriculum, and it is probable that more should be developed. Furthermore, it is quite clear to us that there should be a better process of advising students regarding the balance of such electives with the more traditional university ones and the balance between specialty and general (primary care type) electives.

Although Dr. Cochran was specifically commenting on clinical electives, we

would like to reemphasize two electives offered for HMS students in the preclinical years. These include a Primary Care Preceptorship (initially described in the January/February 1976 issue of the *Bulletin*) and a Community Health Preceptorship. In addition to the "happy" part of these experiences, there are educational components such as required reading, seminars, papers, and formal student presentations that are quite as rigorous as in other electives. The tests and retests of the students (as well as their verbal and written evaluation) confirm the educational benefit of the courses. It should be noted that approximately fifty students have completed one or the other or both of these block electives in the two years that they have been offered. We also should note that they have been firmly supported by Dean Ebert, both conceptually and financially.

There has been perhaps a little less experience with clinical electives that are "offered in the field," but there are some offered with strong educational programs not requiring students to develop their own. Those offered in the department of preventive and social medicine include: 1) Community Health Center (Bunker Hill Health Center — eight students in 1975-1976); 2) Community Medicine Clerkship at Zuni Pueblo — nine students in 1975-1976; 3) Preceptorship in Family Practice — twelve students in 1975-1976 and many more previously; and 4) Primary Care in a Rural Setting (first offered in 1976-1977). In addition, the department of preventive and social medicine cosponsors another clinical elective with the department of medicine at the Peter Bent Brigham Hospital, Preceptorships in Primary Medical Care (approximately fifteen students in the last two years). Each of these electives has its own academic and educational content and is formally offered for credit equal to that of any other clinical rotation.

The fact that these experiences have not surfaced in Dr. Cochran's survey may indicate the relatively small number of students taking these electives, the relative shortness of this experience compared to that in the university hospitals, or other factors. Nevertheless, opportunities do exist with the support of the School and Dean Ebert. The problems that exist in the medical education of students in these kinds of settings are numerous and complex. First, the electives should be sound academically and educationally. Second, there needs to be adequate funding for the time of the teacher as well as reimbursement for at least some of the revenue lost by seeing fewer patients in order to teach. Third, there has to be emphasis placed on the time and dignity of the patient. Since the patient is ambulatory, the increase in time of the patient necessitated by medical student participation should be taken into account. Fourth, the teachers in these sites should be given appropriate recognition for their participation in the education of students.

We hope that the discussion of this important topic will continue to aid the growth and development of this part of the Harvard Medical School curriculum.

George A. Lamb, M.D.
Dieter Koch-Weser, M.D.

Votes of confidence

I move to send you this letter to commend you on the September/October issue of the *Bulletin.* I read it over the weekend with great interest, and particularly enjoyed the papers by Huggins and Ingelfinger.

I had always heard a great deal about Councilman but had never known much about his background. I must say he did pretty well, given his somewhat inauspicious early education.

Robert J. Glaser '43

A quiet Sunday morning, and I've just been reading the *Alumni Bulletin,* and I want to thank you for the magnificent job you are doing with it.

Whenever it's delivered to the house, [my wife] has already read it before I get home and tells me all about the wonderful articles. In the busy life we're having, I don't think I got around to telling you how much we enjoyed it.

Francis M. Ingersoll '38

Alumni Notes

1913

At the age of ninety, **Prodromos N. Papas** is "now semi-retired, practicing office urology and some general practice."

1922

Bradford Cannon '33 called our attention to a feature article in the fall issue of Washington University School of Medicine's *Outlook* magazine, entitled: "**Hallowell Davis,** M.D.; Physician, Researcher Celebrates 80th Birthday by Receiving National Medal of Science." Dr. Davis's birthday was last summer; he received the 1975 medal at a White House ceremony in September. The article recounts Dr. Davis's well-known contributions to the fields of otolaryngology, neurophysiology, audiology, acoustics, electroencephalography, occupational and military health, and pediatrics. Dr. Davis is still actively pursuing research on deafness. An instrument that combines a brainwave machine with a small computer, and can measure the brain's response to sound, has been designed by him as a method for measuring the hearing of children too young or too active to be tested by conventional methods. In honor of his birthday, four of Dr. Davis's colleagues — among them Donald H. Eldredge '46 — have edited a collection of essays written by his former associates. The book is called *Hearing and Davis.*

Reports **E. Myles Standish,** "I am still happy and quite well with my pacemaker. Probably 'par for the course.' Travel annually to the West coast to visit four of our children who followed the advice, 'Go West, young man or *woman.*' "

1923

This issue's lone entry for the Class of '23 comes from Phyllis D. Simmons, the wife of the late **James G. Simmons.** After receiving the last number of the *Bulletin,* Mrs. Simmons wrote to us: "I was distressed to see a blank space in the 1923's, and I felt guilty that I had been late in sending news that would bring honor to the class. Because of Dr. Jim's years of devoted service to his patients, the 'city with a heart' has honored him more than any doctor in Fitchburg's history. Perhaps the greatest and most rewarding to him was the quote 'He was our friend and our Doctor.' Three years after his sudden death this proof of the city's respect has